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Original Articles

Posture a Cause and a Remedy in Enteroptosis

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I sometimes wonder if it is worth while presenting arguments favorable to voluntary neuromuscular training to our readers because of the general lack of interest, or at least moving interest, in the subject. It is quite safe to say that eight out of every ten persons claim they have no time for such forms of physical activity, and that their faith in the efficacy of this work is in corresponding ratio to their belief. However, if the remaining two are willing to improve their efficiency, then I am glad to write a short article on the possibility of restoring certain bodily organs to almost their pristine virtue as working machines.

The word ptosis has become so well known that it is like a bird leaving its nest, for it has departed from the medical confines and is used understandingly by the layman.

Of the four forms of ptosis, the skeletal, visceral, circulatory, and emotional, I will attend to only that form known as enteroptosis, which, for the benefit of the non-medical man who may read these lines, means the falling or displacement of any or all of the vegetative organs; and while visceroptosis and splanchnoptosis may be preferred, we at least understand that the condition is a sagging of the abdominal organs to such an extent that their normal functioning is no longer of 100 per cent value, and, as the body depends upon energy for its efficiency and any displacement detracts from the working value of the machinery which turns food into energy, we may admit without further discussion that if ptoses exist there will be a lessening of the amount of energy stored or used as there would be in the case of any mechanical contrivance that was neglected.

Of the several factors which cause enteroptosis, namely, posture, lack of exercise, too abundant deposit of fat, unhygienic dress, and other predisposing pathological conditions, I will write of posture and exercise as agents of worth in preventing or remedying these displacements.

Incidentally I want to refer to what may seem irrelevant topics, because I wish to call attention to unfortunate existing conditions which militate against a more widely spread and more acceptable gospel of health.

If the lack of exercise is the cause, then exercise is indicated, but unfortunately people will not exercise; they will not go to gymnasia, they fail to join institutions where physical training may be had, and they will not continue the exercises at home; so we will try another plan.

If posture is the cause, then posture may be adopted as a remedy, and as this is a form of physical training that can be easily done at home or on the streets, we will amplify the value of personal bearing, of proper carriage.

The questions of diet, rest, play, relaxation, will for the present be omitted, but at

any rate we must remove the cause, whatever it may be, before attempting to build up the ruins.

Good posture or position, and this includes the replacing of the bodily organs, is of such vital worth that I am going to refer to the findings of a few others who have made a careful study of the subject.

Goldthwaite refers to the results of investigations made by Scholder and Weith in Lausanne, which showed that, among 1254 schoolchildren, in over 20 per cent albuminuria could be obtained by putting the children in certain definite postures.

Jones has shown that the vertical posture is better for action and the discrimination of pitch, the horizontal better for memory and adding.

He studied the reports that came to him from 350 distinguished men, and of this number 65 per cent reported that their position for writing or doing their best thinking was either horizontal or semi-horizontal. One well-known writer did his best work when lying flat, face down.

When studying conditions among college men he found that out of 81 men 35 preferred the semi-horizontal position or the use of a Morris chair, or with feet resting on a table.

In referring to Sir Lauder Brunton, he stated that this eminent scholar was unable when seated to think or write after a hard day's work, but if he placed his head on the desk on a level with the paper he was able to collect his thoughts and the ideas came faster than he could pen them. If he raised his head he was utterly incapable of carrying on the work. In other words, if the blood would not go to the cerebrum he would take the brain down to the blood.

Dr. W. H. Burnham of Clark University says: "Good posture represents one of the habits of prime significance. This is emphasized, first, by the fact that such posture tends to preserve the individual from many physical disorders; second, many ordinary reflexes are connected with posture which conduce to poise, dignity, self-reliance, and efficient and healthful work; and third, because the study of conditioned reflexes suggests that in subtle and unimagined but significant ways conditioned reflexes of the utmost significance to physical and mental health may be developed in connection with posture."

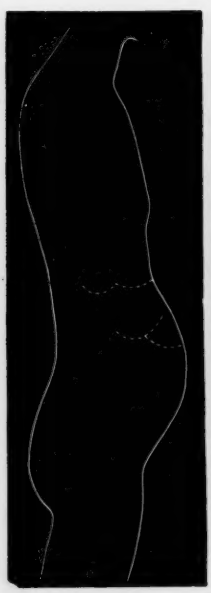


FIG. 1.—Effects of tight lacing.

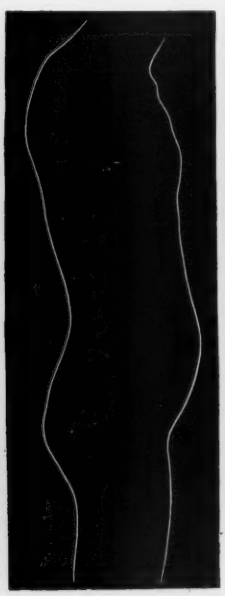


FIG. 2.—Man who had worn a belt.

FIG. 3.—Side profile of a healthy man.

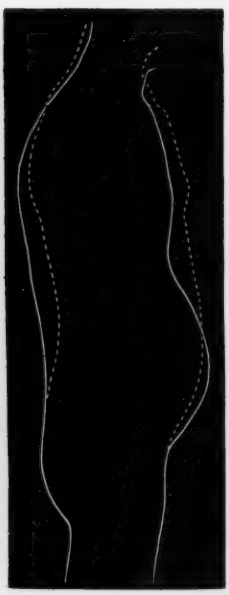


FIG. 4.—A man improved by training.

PLATE No. 1. (Kellogg.)

Dr. C. Ward Crampton in his paper entitled "Good Posture" gives well illustrated exercises which are highly recommended.

Thirty years ago Dr. J. H. Kellogg of Battle Creek, Mich., read a paper on the "Physical Decadence of American Women." His views received the hearty indorsement of Professor Meinert of Dresden. The cuts clearly showed the displacement of the abdominal viscera. He recommended certain exercises in addition to postural improvement.

Those wishing to pay more attention to the subject than I will here are referred to the findings of Glenard in 1881 in France, of Keith, the English investigator, in 1903, to Goldthwaite's writings in 1910, and to the discussion by Dr. J. H. Kellogg as far back as 1893, when he made plain by his paper how much the working value of the abdominal viscera was reduced by these conditions. The Roentgen rays have further proven to what extent the organs mentioned have departed from the positions which for years were so artistically shown in our standard text-books. These unhygienic conditions exist, and they are productive of harm greater than is usually credited to them.

Is it not a sad commentary that to-day there is not in this country a single large isolated gymnasium devoted to physical education? I am not referring to those found in our Y. M. C. A.'s and Y. W. C. A.'s, in colleges, secondary schools, or like institutions, but to a well-regulated edifice devoted entirely to the rational physical uplift of the human body. Such a center, under the supervision of medical men, having the sympathy of the medical profession, offering careful and scientific examinations, medical, orthopedic, and anthropometric, and with a teaching force well trained and competent. There are reputable institutions which will give careful somatic tests, but what I refer to is a health center to which any one may go for treatment as well as a diagnosis.

Again, I know of no school in this country where bodily training of the most comprehensive, complete, and scientific kind is first and foremost, and where the development of the mind has a secondary place.

The wealthy man who will start such a school for boys or girls and stick to it will be doing a great good to very many who need a sound basis for psychic activity.

I hope these ideas will fall on fertile soil, and that in the not too dim future some one may endow a school of this kind. We know only too well that many young men with brilliant minds have fallen by the wayside because of the frail bodies.

The main object of this paper is to describe one posture that will go far toward remedying the abdominal ptoses mentioned, which can be taken by young or old, either sex, will cost nothing, and does not require one to go to a gymnasium.

It may seem strange that the first appliance is a good looking-glass; this will be found in most homes, and if it is not there I hope one will be secured, for it is before the mirror that we want our patient to stand and honestly study his body. He cannot but be unfavorably impressed with the unsightly appearance, especially with the sagging abdomen, the flat chest, the round shoulders, the drooping head, and the growing curves of a spine that like the camel groans under the increasing load. It may be that the esthetic sense is not aroused, but surely the person who suffers or pays the price of carelessness or ignorance would like to be freed from the aches, pains, and inefficiencies which follow the enteroptosis trail.

How many of my readers can honestly say that they do not even know that they have a stomach or liver or spleen or pancreas because they function so normally? How many can, week after week, pity their neighbors who resort daily or nightly to laxatives, because they themselves know not what it is to be irregular in eliminating the ashes of the body? I fear very few, and, what is more, the number who do depend upon aperients is growing, not lessening.

Our lady who studies her body honestly before the mirror will become disgusted

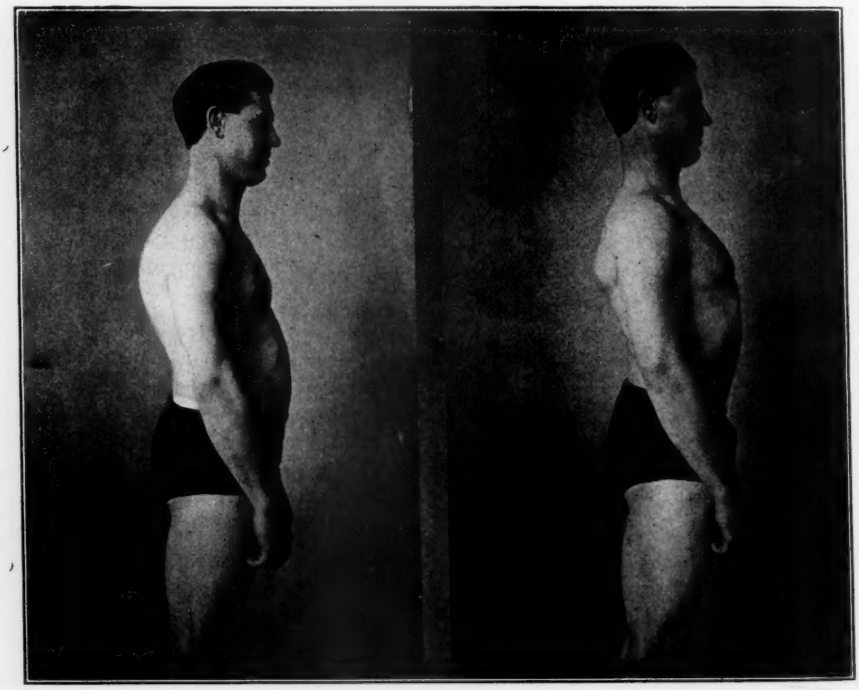
with the reflection, but she can hide the defects with the help of her corsétière, and if other portions of her anatomy need camouflaging there is the corner drug store where certain toilet articles will help. But do these contrivances cure or even remedy? Why won't this woman take just a little of the time required to make her facial, skin or hair toilet and assume a good standing position? Because she does not believe in such procedure or because the results come too slowly.

What does our man do when he finds the chest taking the place of the abdomen? Too often resorts to a "vitality belt"; but the fat remains, only it is pushed farther up against the heart and lungs, and he knows he has difficulty in breathing. He will take pills, but he won't exercise, and so the ever-increasing pressure of the adipose deposits against the walls of the waist line cause a bulging and sagging that is at once unsightly and unhealthy.

The accumulation of weight, due to this deposit of fat and weakening muscles, causes the organs to "slip from their shelves" and fall, and thus to become incapacitated for their best work.

Fat seems to go over the lines of least resistance, and we find it generously deposited on the muscles of the abdomen and around the organs of this cavity. If it finds a resting-place at the uttermost parts of the body it may be more easily removed by certain exercises combined with careful eating, but when one tries to get rid of the fat that has made a home for itself around the great omentum, which seems to have an affinity for such substance, it is the task of Hercules to get rid of it, but it can be done.

In carrying out some research work in which I was interested I raised my weight from 135 to 155 pounds, then later ran it up to 175 pounds, and was for the first time in my life ready to look with favor upon self-destruction on account of the suffering caused by the fat. There was of course ptosis, with accompanying unrest. Continuing, I reduced to 148 pounds, and



Compare the pictures with the outlined figures 2, 3 and 4 in plate No. 1.

then was certain that only the grave held peace and rest for me; now back at 160 pounds the sun shines in my life, but the main fight has been with the reduction of fat in the abdominal cavity.

May I sound this warning? Do not put on too much weight, and under no conditions try to reduce too much, for nature demands payment in either case, and her bill will be receipted; there is no exception.

No attempt will here be made to discuss the diet, and no long list of exercises will be printed, for that would be a waste of time and effort, but I will mention one posture which is most helpful and *must* be taken if enteroptosis is to be remedied. There are also two exercises I will describe, both excellent, but if our corpulent, ptosic patient will not do this much he will find the income tax modest and shrinking alongside the demands of Dame Nature.

Posture No. 1.—Study the details of the half-tone and note the changes that have taken place in the appearance of the powerful youth who stood before the looking glass and involuntarily assumed a more hygienic attitude. He brought into play many groups of muscles (see Exercise No. 2).

Our patient with the sagging abdomen and falling vegetative organs must do this many times daily. At home, on the streets, in the car, at the office, theater, or church, while sitting or standing, and on every occasion. I promise without hesitation that the results will be excellent.

Mantegazza once said that if a person wished to feel like a fool it was only necessary to stand and look like one. May I add that to feel wide-awake and "chipper" it is only necessary to assume and hold an alert, energy-full position?

So far as possible never bend the spine in the thoracic region when the hinge can be put at the pelvis—*i.e.*, in leaning over a table or desk.

Grasp every opportunity to strengthen the spinal machinery.

Arching the chest brings into action the erector spinæ muscle; at the same time the abdominal contractile tissues are shortened.

Exercise No. 1.—Intended to widen and deepen the thorax, to give greater space for the heart and lungs, to overcome round and stooping shoulders, and to strengthen the abdominal muscles and spine (see Figs. A and B).

With the feet apart sidewise bend the elbows smartly as seen in A, place the finger-tips over the top of the deltoid, elbows back, and the scapula flat against the posterior thorax. Arch the chest to its utmost, draw in the abdominal muscles, and hold the position five seconds.

A. B.

Next thrust the arms slowly upward as in Fig. B, and at the same time bend the body backward slightly, and look up. Hold this position five seconds.

Next return to position A and hold for five seconds; then lower the arms to the side and relax, but do not assume an unhygienic attitude. While in the relaxed state breathe deeply.

This exercise has taken only twenty seconds, or one-third of a minute. Take it twice more, and the wonder will grow that it actually tires one. Consider how many groups of large muscles have been brought into action: those on the back of

the leg, on the front of the thigh, the back and sides of the hips, the entire erector spinæ group, those across the shoulder-blades, all the abdominal muscles, and every small one used in raising the ribs.

Holding a position five or ten seconds causes both destruction and accretion in the tissues, or chemical changes, which are desirable in securing growth and development. The deep breathing aerates the blood.

Outline diagram of quadruped, axis of spine at right angles to vertical dotted line. (Goodsir.)

Now it will be necessary to quicken the action of the heart and lungs, and this is done by the following:

Exercise No. 2.—To quicken the action of the heart and lungs. With the hands on the hips, fingers forward, feet apart, rise on tiptoes, then half bend the knees, lowering the body; next extend the knees, and lastly lower the heels. This takes at first two seconds, but should be done in one second. Take it five times. It will be found that the pulse-rate will jump from seventy-five to ninety or even more, depending upon how much active leg work our subject is in the habit of doing in his daily life.

Outline diagram of bird. Axis of spine lies obliquely to vertical dotted line. (Goodsir.)

It is not essential that the rate be advanced to one hundred and twenty or more, because what we are striving for is the change which will take place when there is a rational balance between the constructive and destructive metamorphosis of tissues.

Before closing let me suggest that *rapid* walking is a splendid exercise for the adult. Increasing the speed when going up-stairs greatly quickens the heart action. Sauntering or strolling along the streets is not a good exercise; it is a highly reflex act, hence economical and conserves energy.

Another suggestion that is worth while: When in your office lean against your desk and gently bend the body backward and forward. This brings smartly into action the abdominal muscles, which, in enteroptosis, are daily losing their resistive strength.

Outline diagram of monkey. Axis of spine lies obliquely to vertical dotted line.

The whole matter may be summed up in these words: "It has taken months or years for the changes to insidiously come and for the enteroptosis to interfere with the production of energy, so it will take time to remedy; but what I most want is the formation of a *habit* of standing well and almost continuously bringing into action the waist line and spinal muscles.

It may occur to the reader that we are placing great stress upon the spinal column, and we are, for figuratively and literally we want men and women with "backbone" of the best quality.

It is interesting to know that of all animals man is the only one whose spinal axis is vertical, and that being the case man's best work is done when the vertebral column is kept in its normal state.

If we change these lines he becomes to a greater or less degree incapacitated for high-grade work. It is just as true if we modify the obliquity of the spinal column of animals; a dog on two feet is useless, the ape when straightened out like a man apparently suffers, while the bird maintains the angle as seen in the accompanying outlines from Goodsir.

Regarding the verticalness of the human spine Turner says: "But man possesses certain special or distinctive anatomical characters. The most noticeable, as seen on an external examination of his body, is his erect position. He is, indeed, the only living creature that can walk or stand erect —*i.e.*, with the axis of the spine vertical; with the hip and knee joints capable of being fully extended, so that the leg is brought into line with the thigh."

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A Brief Review of Modern Methods in the Diagnosis of Renal Disorders[1]

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Prefatory Comment.—There can be but few, if any, engaged in the active practice of medicine who are unaware that a new and important chapter has been added to our knowledge of renal disease and renal deficiencies. During the past ten years medical literature has presented an ever-increasing number of contributions containing the record of many studies and advances. At the present time the study of a patient suspected to be the subject of renal disease involves, for the most part, the use of methods of comparatively recent development. The general conception of renal disease has veered from an anatomical to a functional basis. Until comparatively recently, for want of a better plan of classification, the clinical endeavor was to group forms of renal disease into several anatomical types, according to post-mortem findings. The older classification of Bright's disease recognized acute and chronic nephritis. The chronic form was subdivided into parenchymatous (large white kidney or later small white kidney) and interstitial (contracted or granular kidney), according as the changes in the former type chiefly affected the glomeruli and tubules, or were largely confined to the blood-vessels and connective tissues in the latter.

The clinical investigation consisted in ordinary urinary examinations, often yielding findings interpreted as indicating renal disease when none existed, or, perhaps,

[1]Read before the Philadelphia County Medical Society.

quite as often failed to reveal such disease when present and well advanced. Toxic symptoms, edema, arterial sclerosis and hypertension, anemia, and cardiac hypertrophy were associated findings upon which considerable diagnostic dependence was placed. In the chronic forms only well-advanced cases were recognized, and most of them were beyond amelioration and were short-lived. The diagnosis of Bright's disease was equivalent to a death warrant calling for early execution; it still carries with it in the minds of the laity, and even in professional estimation, a significance of sinister import. The treatment had no rational basis. There was much confusion, uncertainty, and error. Clinicians had become accustomed to the jibe of the pathologist that they were likely either entirely to overlook a renal affection, or fail to determine antemortem its anatomical variety; the obvious retort was a challenge to the pathologist accurately to describe the urine which a kidney examined post mortem had secreted before death, or the symptoms which it had produced. Manifestly, an anatomical conception of renal affections based upon end results as seen in the post-mortem room, and even then often impossible of classification or correlation with clinical findings, could have only a limited value in diagnosis, prognosis, and treatment. The more recent tendency to develop a functional estimate has made for earlier recognition, and given more confidence and exactitude to both diagnosis and treatment.

Another important result of the reawakened interest has been to give an impetus to the study of renal physiology. Many new facts of value concerning the functional activity of the various histological elements entering into the kidney structure have been revealed, although much still remains to be learned.

The importance of a functional conception of renal disease becomes apparent when it is realized that anatomical lesions are incorrigible; a rational plan of treatment by a regulation of the diet is one in which the demand made upon the kidney is lessened to within its decreased functional capacity. Unless the nature and degree of functional impairment are ascertained, we have no definite basis upon which to base either prognosis or treatment. Diagnosis includes the recognition of both the nature and degree of a disorder. Anatomical lesions have an importance in proportion to the functional impairment which they occasion.

The present communication is an attempt to present an outline of the modern methods of investigating renal disorders.

Important Fundamental Considerations Regarding Renal Function and the Evidences of Renal Deficiency.—An accurate appreciation of certain fundamental facts bearing upon renal function and the results of renal failure is a prerequisite to an appraisal of the value of ordinary clinical findings and special tests. A statement of renal function, set forth in simplest terms, would present the kidneys as the chief excretory organs upon which falls the burden of maintaining the molecular concentration of the blood at fixed points by the elimination of water containing sodium chloride and other salts, urea, uric acid, creatinine, and other nitrogenous substances, and certain other less important products. Normal kidneys are capable of exercising a functional capacity several times greater than is necessitated by the demands made upon them under ordinary circumstances. Their accommodation limits enable them to meet, without overstrain, unusual, exceptional and variable conditions, in which waste products, in varying amounts, gain access to the blood; despite the constantly changing burden of waste products, the composition content percentages remain fixed, or vary only within narrow limits.

One important evidence of renal failure is a loss of reserve power, a widening of retention limits, and the accumulation of waste products in the blood above normal percentages. The failure will first occur only as the result of some unusual demand, but as the lesions are progressive in their development the dependent functional failure will ultimately become constant, the

degree of the failure varying according to the demand and the extent of the lesions.

The symptoms of marked renal failure are wide-spread in their distribution, and affect several physiological systems. The various estimates and tests of renal functional capacity depend upon a determination of the composition of the blood, the measurement of kidney elimination under known conditions, and their response to certain tests designed to determine their ability to meet a measured demand, the average response in health being known and used as a norm.

Several preliminary points with regard to the ordinary chemical and microscopical examination of the urine should be emphasized. Urinalysis is not a means of measuring kidney function. Numerous casts and much albumin may be present with almost normal capacity; both may be absent with great impairment. Fifty thousand healthy soldiers studied by MacLean showed morning albuminuria in 6 per cent. Orthostatic albuminuria in childhood is often severe without anatomical lesions or permanent functional impairment. Positive urinary findings constitute an indication for a more thorough and painstaking investigation of renal function. Negative or slight findings are not to be relied upon as excluding considerable renal damage.

Estimation of Renal Failure by Blood Analysis.—Our knowledge of the chemistry of the blood in renal disorders is of recent development. While much remains obscure, a great deal of light has been thrown upon the subject of nitrogen retention. The practical value of this work lies in a more exact knowledge of the percentage concentration of the non-protein nitrogen of the blood in both health and disease. The fact of retention of these substances beyond normal amounts means, of course, a defect of excretion—*i.e.*, their concentration in the blood is caused by an eliminative failure of the kidneys. The correlation of the two facts is obvious.

Referring to non-protein, the consensus of the best opinion at present establishes the following values as upper normal limits for blood constituents per 100 cubic centimeters of blood: Total non-protein nitrogen, 35 to 40 mg.; urea nitrogen about 50 per cent of the total, the absolute amount being from 10 to 20 mg.; creatinine 1.0 to 1.5 mg. Creatin nitrogen, amino nitrogen, and ammonia nitrogen are present in small amounts. Normal sugar concentration has been fixed at 0.1 to 0.15 per cent. The foregoing figures are used as controls in interpreting blood findings in abnormal cases. With impairment of renal function and consequent blood retention, the total non-protein nitrogen may reach 100 or 200 mg., or more, per 100 Cc. of blood. Blood urea is chiefly responsible for the increase (azotemia), the urea nitrogen often amounting to 70 to 90 per cent of the total. Passive congestion of the kidneys, or a diet rich in proteins, may produce an increased nitrogen concentration in the blood, but the total will not exceed 45 mg.

Uric acid occasions the greatest difficulty in elimination; creatinine, the least; urea occupies an intermediate place. Uric acid concentration is an early evidence of renal failure; creatinine concentration occurs only as a late manifestation, and is an evidence of advanced disease. A value exceeding 5 mg. per 100 Cc. of blood has usually terminated fatally; it may reach 15 to 20 mg.

A marked increase in the total non-protein nitrogen may be a herald of uremia, although uremia may occur with a low retention, indicating that some other element is the essential factor in its production.

In the interpretation of the results of chemical analysis of the blood in renal disease, it should be emphasized that an ultimate diagnosis of renal damage is not to be attained by this means alone. It is a fact of pathological importance that the lesions of nephritis in many cases are patchy and uneven in their distribution. The kidneys may suffer a certain amount of damage and yet be capable of normal function under ordinary circumstances, the impairment be one of reserve power, and marked failure occur only under unusual stress. H. MacLean's conclusion that, on

an average, the essential structure of kidney may be reduced by three-fourths of its total before nitrogen retention occurs is of interest. Richard's observations on the kidney of the living frog, showing activity of one group of glomeruli with inactivity of other groups, also indicate a very considerable latent unused reserve power. The vicarious function of other organs may be a factor in preventing nitrogen concentration with failing kidneys. The skin, liver, stomach, intestines, and even the bronchial tubes, may excrete urea, and perhaps other nitrogenous substances as well. A patient with severe nephritis and oliguria, observed by one of us, expectorated a daily average of 1500 Cc. of sputum containing over 2 per cent of urea. With an increase in urine the amount of sputum and the percentage of urea rapidly diminished. Another patient with nitrogen retention of moderate degree showed two per cent of urea in vomited material. The diarrhea of uremia is probably often due to vicarious urea elimination. Urea frost upon the skin is frequently observed. In acute nephritis of severe degree and rapid development, nitrogen retention of high grade quickly develops. In chronic forms, increased activity of unaffected regions, and the assumption of vicarious function by other organs, tend to postpone the evidences of renal deficiency for considerable periods of time.

Another factor which may be of considable importance is the probable diuretic effect of the increased urea content of the blood, stimulating the kidneys to increased function so that the output and urine content may be normal for a time. F. C. MacLean believes that a blood concentration of 20 to 40 mg. of urea acts as a stimulus to renal function; the increased blood concentration of renal disease, therefore, serves to establish a nitrogen equilibrium.

The output of urea also depends, in part, upon the amount of urine excreted. Ambard demonstrated the normal maximal concentration of urea in the urine to be 55 gm. per liter. A total excretion of 100 Cc. of urine per diem, therefore, would permit of a total urea elimination of not exceeding 5.5 gm. Under such circumstances, if a normal amount of urea has been formed, blood retention must necessarily occur. In Asiatic cholera with oliguria, high nitrogen values are constantly present in the blood. The same is true in acute nephritis with low urinary output. Marked decrease in the amount of urine from any cause will result in increased blood concentration of nitrogen.

It may further be added to what has already been presented regarding the general effects of blood retention of nitrogenous bodies that the condition does not satisfactorily explain all of the systemic and local effects associated with such concentration. We are, perhaps, too prone to look upon diseased kidneys as a clinical entity, rather than to regard the results as a metabolic insult to the entire organism. Retinitis is often an associated condition, but has not been demonstrated to be due to nitrogenous bodies. Scholl and Foulds report the case of a patient with anuria in whom the blood urea reached 528 mg. per 100 Cc. of blood; there were no evidences of toxemia and little disturbance of any kind. The same absence of symptoms has been noted in bichloride poisoning, and after the removal of a single kidney with anuria. The intravenous injection of large amounts of urea produces little systemic reaction. The toxic base of undetermined chemical formula isolated by Foster, and found to be present in many cases of uremia, more convincingly explains the phenomena of that condition than does nitrogen retention.

Functional Tests of Renal Capacity.—Many attempts to devise a satisfactory test of renal function have been made during a considerable number of years. It is only comparatively recently, however, that functional tests have been so simplified and extended that they can be used with ease and accuracy by any practitioner. Many important aspects of kidney activity are revealed by the simplest tests requiring only careful observation and intelligent interpretation. The normal kidney excretes urine

which varies in concentration at different times in the twenty-four-hour period. There is a reaction to both food and fluid stimuli, so that the molecular concentration of the blood remains within fixed normal limits. The rapid removal of a large amount of solids from the blood following a meal will raise the urinary specific gravity unless the urine is proportionately increased in amount; the removal of a large amount of fluid from the blood will lower the urinary specific gravity unless there be a corresponding elimination of solids. The kidneys show considerable flexibility in their ability to meet these varied demands, and this flexibility may be measured with some degree of accuracy in various ways.

A careful determination of the specific gravity and quantity of both day and night urine yields important data. A knowledge of these two factors makes possible an estimate of the total amount of solids excreted. The amount of urea excreted can easily be determined by the use of the ureometer. From the urea the amount of nitrogen eliminated can be calculated. Fifteen grammes of urea contain 7 grammes of nitrogen.

Another simple test of renal excretion is afforded by the administration of a measured amount of water and the determination of the amount eliminated in a given length of time. If less than the normal amount is excreted, renal disease and diminished function are suggested.

Two other simple tests may be used to reveal functional impairment occasioned by contracted kidneys. The first stage is shown by a loss of power to concentrate the urine. A healthy individual placed on a very dry diet for twenty-four hours will show a rise of urinary specific gravity to 1030 or 1040. In contracted kidney, a patient placed on a dry diet may excrete a urine having a specific gravity not exceeding 1011 to 1013. In other words, the kidneys show an inability to concentrate the urine, the so-called first stage of fixation of the specific gravity. The second stage consists of a loss of power to dilute the urine. Normally, the ingestion of a large amount of water will result in a reduction in the specific gravity of the urine to 1003 to 1005. If this power to dilute the urine is lost, it constitutes evidence of a more advanced stage of disease. Fixation of the specific gravity under both tests shows that the kidneys have lost the power either to concentrate or dilute the urine.

A more elaborate test may be made by collecting the urine systematically during the day at the end of each two-hour interval, beginning at 8 A.M., and ending at 8 P.M. The night urine during the succeeding twelve hours should also be collected separately. The amount and specific gravity of the urine of each two-hour and the night periods should be measured and the specific gravity determined. A night urine equaling in amount the day urine suggests contracted kidneys. Fixation of the specific gravity throughout the twenty-four hours is confirmatory. Nocturnal polyuria is one of the earliest symptoms of contracted kidneys. The ratio exhibited between the amount of night and day urine in health is from 1:4 to 1:2; in disease the amounts are about equal, the kidneys having lost the ability to concentrate.

Mosenthal has devised a more careful test in which a measured diet is administered, and more accurate deductions as to kidney excretion can be made. The diet, to which the patient is carefully restricted, contains approximately 13.4 grammes of nitrogen, 8.5 grammes of salt, 1.760 Cc. of fluid, and a considerable quantity of purin material in the meat, soup, tea and coffee which are included. The urine is collected at the end of each of the six two-hour periods during the day, beginning at 8 A.M., and during the night.

Normal individuals will present the three following urinary characteristics:

The specific gravity of the different specimens will show variations, usually of nine or more points. The daily intake and output of salt, nitrogen, and fluid will be approximately equal. The night urine will be high in specific gravity (1016 to 1018 or higher), the percentage of nitrogen high (above 1 per cent), and the total quan-

tity of urine small (750 Cc., or less), the latter regardless of the quantity of urine passed during the day.

Impairment of the kidney function is indicated by the following findings:

Nocturnal polyuria (over 750 Cc.).

A tendency to polyuria throughout the entire period, the volume of urine equaling or surpassing the amount of liquids ingested.

Fixation of the specific gravity within narrow limits; in advanced stages the maximum variation may not exceed 1 or 2 degrees.

Fixation in the two-hourly quantity of urine eliminated. The diuretic influence of food ingestion is absent.

If the night urine diminishes to within normal amounts, it will show a low nitrogen content and low specific gravity.

There may be a marked retention of both salt and nitrogen.

The urea test, as described by Edward Weiss after MacLean and DeWesselow, consists in the administration of 15 grammes of urea in 100 Cc. of water flavored with tincture of orange. The stomach and bladder should both be empty. The urine is collected one hour and two hours later. If either specimen exceeds 150 Cc. in amount, a third-hour specimen is collected and examined; otherwise the urea percentage content of the second-hour specimen is taken. A urea percentage of 2 per cent in the excreted urine indicates normal function. In disease of the kidney it may fall to 0.5 per cent.

The phenolsulphonephthalein test is one of the simplest and probably the best and most reliable test for kidney excretion. It can be made by any practitioner. Convenient ampoules containing slightly more than the required amount of the solution of 6 mg. of the dye to each 1 Cc. of fluid may be kept at hand. The bladder should be emptied, at least 500 Cc. of water taken, and exactly 1 Cc. of the solution administered hypodermically. At the end of one hour and ten minutes, and again at the end of two hours and ten minutes, the urine is voided and separately saved. The amount of dye in each portion of urine is easily estimated by means of a colorimeter, or by comparison with standard solutions of known strength. The normal excretion varies from 40 to 60 per cent in the first hour, and 20 to 25 per cent in the second hour. Diminished excretion is shown in disease. The test is useful in estimating both the degree of damage and the progress of a case, either as to improvement or further impairment.

Conclusion. — The conclusion of this paper is a plea for a more general recognition of the importance of a functional conception of renal disease, and a more frequent utilization of the more exact methods of determining both the presence and the degree of impairment of renal function. Too much reliance has been placed upon ordinary urinalysis, and much error and uncertainty occasioned thereby. No group of serious affections has been more perfunctorily regarded, or the subject of more mistakes. Many of these errors will be avoided if practitioners of medicine will familiarize themselves with one or more of the simplest tests, and apply them with intelligent understanding.[1]

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[1] Another article dealing with a cognate topic more in detail will appear by these authors in the next issue.—Ed.

Non-operative and Postoperative Treatment of Cancer[1]

BY GEORGE E. PFAHLER, M.D.
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Judging from the other titles in this symposium, I take it that I am called upon to discuss this subject from the standpoint of treatment by other methods than surgical excision, with the consideration of postoperative treatment by means of the *x*-ray or radium. On account of the breadth of this subject I will have to be excused for any dogmatic statements that I may make, for I am sure that it is desired by all that the discussion be as brief and as pointed as possible.

SKIN CANCER.

The *basal cell epitheliomata* can all be cured by thorough and skilful applications of either *x*-ray or radium, and it is the consensus of opinion that generally it is best to treat these patients with massive doses sufficient to destroy all of the cancer cells at once. Massive-dose treatment requires more skill than fractional doses, but I am sure that it is more certain to produce permanent results. Treatment by either the *x*-ray or radium (and radium is probably preferable) will produce the least scarring, and in many instances the lesion can be made to disappear with no scar whatever. When there is no objection to a soft pink scar I commonly destroy the lesion by electrocoagulation at the very outset and follow this with *x*-ray treatment. This I believe produces the quickest results, but it is a mistake for any one to attempt to destroy any epithelioma by a fractional process. It is especially important that we use radiation in the treatment of the epitheliomata occurring about the eyelids, for scars in this region are apt to cause contraction and to give rise to ectropion and disfigurement, and therefore either operative removal or destruction by electrical methods is generally inadvisable.

The *squamous cell epitheliomata* are more resistant to all forms of treatment, recur after excision or incomplete destruction, and give rise to metastasis, and it is therefore especially important that this group be treated very thoroughly at the outset by radiation or electrical destruction. I believe that all cancers of the skin, if treated early and thoroughly, can be gotten well. Where these epitheliomata are excised they should be followed by *x*-ray treatment.

CANCER OF THE MUCOUS MEMBRANE.

Epithelioma of the lip I believe is best treated by thorough radiations alone, or by local destruction with electrocoagulation followed by thorough radiation with the *x*-rays. By this process, so far as I know, I have not yet failed in a single instance to cure all primary epitheliomata of the lip. I believe that no one has yet been able to report 100 per cent of cures by any excision, no matter how extensive. In all these cases the neighboring lymphatics must be thoroughly treated by radiation. If surgical excision is undertaken these patients should receive thorough postoperative treatment as soon after the operation as the patient can get the *x*-ray treatment.

In those cases in which there has been so much destruction of the lower lip by the disease as to make electrocoagulation inadvisable, I have obtained best results by the application of radium, and if this is carefully done one can usually preserve the remaining portion of the lip. In these advanced cases one usually finds that the patient has already been treated by plasters or partial excision or some form of local destruction which was incomplete; one is then dealing with a failure in treatment, and the prognosis is less satisfactory.

Epitheliomata elsewhere in the mouth should be treated by a combination of

[1] Read in a symposium on cancer before the Northern Medical Association of Philadelphia, March 11, 1921.

radium and *x*-ray, and at times by local destruction with electrocoagulation, and in many instances excision of the cheek or half of the lower jaw. These cases cannot be easily grouped; generally each case is a law unto itself, and must be considered from all angles, preferably by both surgeon and roentgenologist in consultation, before anything is done. I believe that in all cases coming to operation the end results will be improved by postoperative *x*-ray treatment.

CANCER OF THE BREAST.

Theoretically the ideal treatment of cancer of the breast consists of an anteoperative course of *x*-ray treatment, by which the cancer cells are devitalized or totally destroyed. This treatment, therefore, makes transplantation or extension during the

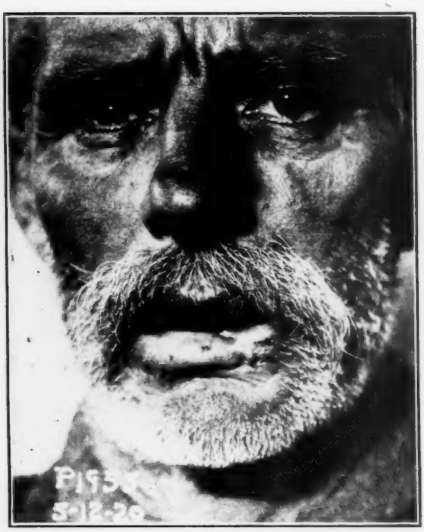

FIG. 1.—(*a*) Epithelioma involving the entire lower lip. November 23, 1920.

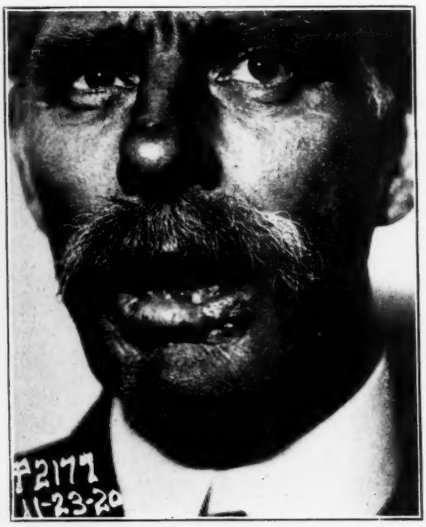

FIG. 1.—(*b*) All evidence of disease has disappeared under radium treatment, with no loss of tissue. Still well March 5, 1921.

FIG. 2.—(*a*) Epithelioma of the lip referred by Dr. H. W. Stelwagon, destroyed by electro-coagulation followed by *x*-ray treatment over the lip, chin, and submaxillary glands. Last treatment given April 7, 1914.

FIG. 2.—(*b*) Well April 7, 1914. Photograph made January 8, 1915.

operation less likely. By anteoperative treatment I mean a preliminary course of treatment which will require usually a week or ten days, and I believe that the patient should then be operated upon immediately. This operation should be complete and just as radical as though no *x*-ray treatment had been given. The patient should then be treated again approximately a month after the first course of *x*-ray treatment, or as soon as it is practical after the operation. When anteoperative treatment cannot be given the postoperative treatment will undoubtedly decrease the chances of recurrence and metastasis, but of course will not eliminate these probabilities entirely. No satisfactory statistics have ever been prepared on this subject, but I believe that the patient's chances of permanent recovery are about doubled as compared with surgical extirpation alone.

Recurrences and metastasis from carcinoma of the breast will generally yield, at least temporarily, to thorough radiation. Each of these cases is a law unto itself, and the form of treatment must be judged according to the indications in the individual case. In some instances much can be ac-

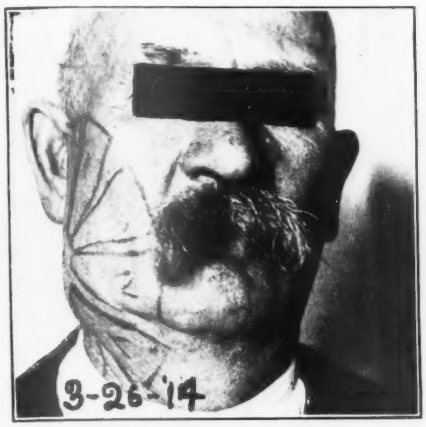

FIG. 3.—(*a*) Sarcoma of the neck. Referred by Dr. John B. Deaver, March 26, 1914. Treated by *x*-ray. Last treatment given April 9, 1914.

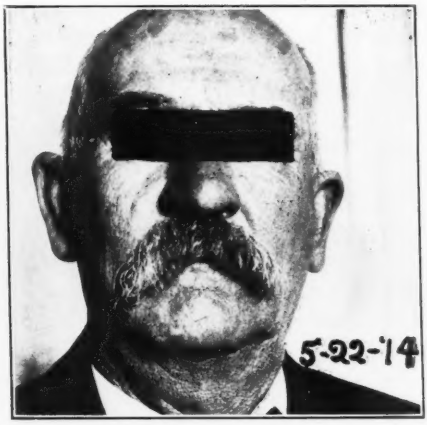

FIG. 3.—(*b*) No evidence of disease May 22, 1914.

FIG. 4.—(*a*) Retrobulbar sarcoma. Referred by Drs. Ross H. Skillern and Maxwell Langdon, June 18, 1917. Treated by *x*-rays. Last treatment given December 15, 1917.

FIG. 4.—(*b*) No evidence of disease October 13, 1917. Note no damage done to the skin or eye, not even loss of eyebrows or eyelashes. Still well March 30, 1921.

complished by the introduction of radium needles into the metastatic nodules. In other instances the local application of radium over metastatic nodules with general treatment over the larger areas by means of the *x*-ray will accomplish most. In dealing with metastatic carcinoma, however, one must always be on guard for a recurrence or metastasis elsewhere in the body. For instance, I have treated a patient with a local recurrence covering an area 3 by 4 inches in diameter and firmly adherent to the chest wall which disappeared completely and with no recurrence locally at any time, but nine years afterwards metastasis was discovered in the spine, and even this has yielded under treatment. I have treated a number of cases of metastatic carcinoma of the spine following amputation of the carcinoma of the breast, and in a number of instances have secured complete healing of the vertebræ. One patient has remained well three years, and is doing all of her housework, including her washing and ironing, yet she had been bedfast for fifteen weeks preceding the *x*-ray treatment, and had total destruction of one of the vertebræ and partial destruction of another. However, I believe that in all cases in which the disease has extended to the spine we must expect, sooner or later, that other portions of the osseous system will become involved.

Primary Carcinoma of the Breast.—In inoperable cases, and in all those in which there is a contraindication to operation, they can be treated by radiation with a reasonable hope of success. I have seen complete disappearance of the tumor masses of the breast, and even the metastatic nodules, and have patients that have remained well for ten or more years. In these primary cases I have obtained best results by a general application of the *x*-rays from all angles directed toward the breast, and then in two or three weeks I introduce radium needles in whatever tumor mass remains. I believe this to be the best form of treatment in the primary inoperable cases. All cases of carcinoma of the breast

FIG. 5.—(*a*) Osteosarcoma of the fibula. Referred by Dr. M. P. Warmuth, March 3, 1906. Section removed was reported as round-cell sarcoma. Treated by the *x*-rays during three months.

FIG. 5.—(*b*) Followed with *x*-ray examinations during six years. Progressive recalcification of the tumor area. Still well September 15, 1919. Probably well to-day.

should have an *x*-ray study of the chest for metastasis, for approximately 50 per cent of the patients as they come to me have metastasis in the chest.

CARCINOMA OF THE UTERUS.

In a number of the German clinics operative procedures for carcinoma of the uterus have been abandoned, and these patients in those clinics are treated by radium and *x*-rays, and, it is claimed, with greater success than has been obtained by operations, with very much less risk to the patient. In some of the American clinics a progressively increasing number of patients are being treated by radiation, and the border-line of operability is rapidly contracting. I am quite sure that in all doubtful cases, and of course in all inoperable cases, more satisfactory results can be obtained by thorough radiation than by any other means. It is surprising at times to see the complete disappearance of great masses of malignant disease in inoperable cases. I am quite sure that in all these pelvic cases the combination of radium internally and thorough radiation by the deepest *x*-rays externally will accomplish the best results. In the operative cases of carcinoma of the uterus I believe that thorough radiation of the pelvis will decrease the liability of recurrence.

In general, a careful consideration of each case by the surgeon or gynecologist, and together with the radiologist, will probably bring about the most satisfactory results for the patient.

Renal Disease from the Medical Standpoint with Particular Reference to Classification and Treatment.

In the *Journal-Lancet* of January 15, 1921, HIRSCHBOECK states that the fundamental element is to provide a diet based on the ability of the kidneys to handle water, salt, and nitrogen, respectively. This summary of the treatment is necessarily brief, and only the salient points are emphasized.

When we remember that practically all cases of chronic nephritis begin primarily as acute cases, either mild or severe, the thought is immediately forced upon us that very many of these apparently mild acute cases are entirely overlooked. In all acute fevers, particularly of the coccal variety, the urine should be repeatedly examined, and particularly during convalescence must the case be under strict surveillance so that no renal development may be overlooked, and if the urine is not normal, bed rest and proper dieting should be adhered to until these symptoms subside. In acute kidney disease, kidney rest is of prime importance. The diet must be regulated according to the function of the particular case in question. In cases of salt and water retention the fluids must be restricted materially, in order to favor the elimination of the fluid from the hydrophilic tissues. The diet, of course, should also be salt-free. In cases of nitrogen retention or in cases showing frank uremic symptoms, the protein content of the food must be either entirely eliminated or at least reduced to an absolute minimum. Epstein is inclined to think that it is advisable in cases with albuminuria to give a moderate amount of some of the milder proteins, as egg-albumen, on the supposition that this makes up for some of the protein-tissue waste, which disappears in the urine as albumin. This is still a mooted question, however, and clinicians are rather reluctant to generally accept his idea.

Drugs occupy practically no place in the treatment of acute kidney disease, and may do distinct harm, particularly the theocine derivatives. After the acute stage has subsided, iron is of distinct value. Bed rest, absolute, should be insisted on in all cases. If any signs of cardiac insufficiency develop during the course of the acute process, digitalis is the medicine of choice. Diaphoresis and catharsis can be resorted to, and daily sweats are of distinct value, oftentimes considerably accelerated by a preliminary dose of pilocarpine, of from 1/10 to 1/5 of a grain. In severely ill, uremic cases, the pilocarpine oftentimes can be persistently used, and in personal cases

he feels that its use in repeated doses for an hour or two has often been a life-saving measure. In the acute cases, furthermore, venesection is probably of value, as the anemia is not so marked in these cases.

In the subchronic glomerulonephritis, the picture usually associated in our minds as the chronic parenchymatous nephritis, the salt and water retention must be combated by a reduction in the water intake and salt. It is difficult to say what the optimal amount of water is which should be taken by these patients, and no consistent work has been done to establish this point, as emphasized by Christian, but there is probably no evidence contradictory of the fact that the amount should be, at least, considerably reduced. It is questionable whether drugs are of any value. If cardiac complications ensue digitalis again must be used. The diuretics are questionable according to the best authorities. Diuretin, and agents of that kind, if used at all, should be given intermittently and not continually, the best way, probably, being to give it two or three days and then stop for an equal period of time. By restricting the water we usually promote artificial diuresis, due to the elimination of the edematous fluid. Catharsis is also of value in these cases, promoting kidney rest. In cases of this kind, and also in the nephroses accompanied by edema, we often have diuretic crises—that is, the patients for a long period of time do not seem to show any effort at increased elimination of the water and salt, when suddenly things seem to start working, and in twenty-four hours very considerable amounts are passed. Iron is a necessity in these cases on account of the impairment of the blood; bleeding is of no value whatever, and in fact may do serious harm on account of the attendant anemia.

When nitrogen retention occurs the proteids should be eliminated practically entirely. The heart must carefully be guarded in these cases on account of the hypertension, and whenever symptoms of extremely high blood-pressure occur, rest is very important, even in well compensating cases otherwise. Diaphoresis, diuresis, catharsis, must all be pushed moderately in those cases which are well compensating, and rather vigorously in those that are not compensating well. These cases terminate either by uremia, cardiac defeat, or cerebral hemorrhage. In certain cases, which threaten to die of apoplexy, bed-rest frequently brings the pressures down to reasonable limits. Digitalis must be used in cases in which cardiac failure threatens, and when it has developed the treatment must be directed toward the myocardial insufficiency. The latter cases can usually be recognized by the irregularity or rapidity of the heart action, by the approximation of the systolic and diastolic pressures and by the occurence of râles in both bases posteriorly in the lungs.

The pushing of water intake in these cases is of doubtful value, and is harmful in the myocardial complications. Miller found recently that by giving the patient enormous amounts of water for several days he was unable to effect any change in the nitrogen concentration in the blood. Austin and Miller also found that even in spite of the apparent benefit derived from diaphoresis no change occurred in the nitrogen retention products. The acidosis in these cases of chronic interstitial nephritis is not due, as in diabetes mellitus, to the formation of acetone and diacetic acid, but to the retention of the products of metabolism. It is in these chronic cases that diuretin sometimes seems to be of distinct value, in some way apparently promoting diuresis and also seeming to have an indirect effect on the blood-pressure and the general symptomatology dependent upon the hypertension. Focal infections in these cases must be removed with reluctance, as they frequently are resultant rather than causative, and their removal may add an increment of toxins overwhelming to the patient.

Editorial

THE USE OF PREPARATIONS OTHER THAN QUININE FOR MALARIAL INFECTION.

It will be recalled that not long after Ehrlich introduced arsphenamine as a remedy for syphilis, he also advised that it should be given intravenously in cases of persistent malarial infection due to poor resistance on the part of the individual, or to the fact that an immune strain of parasites had been developed as the result of the use of small prophylactic doses of quinine. So far as we have observed in the medical literature, this suggestion has not been carried out to the extent that was to be expected, which may mean that not sufficient publicity was given to his suggestion or that it has been tried by a few members of the profession, who, having gotten poor results, have not seen fit to report their failures.

Whatever the explanation may be, we believe that medical men will be interested in a contribution recently made to the *British Medical Journal* by Pratt-Johnson, Gilchrist, and Hay-Michel of the medical corps of the British army. Their investigations were carried out during 1917-1919 on malarial patients invalided from the German East African campaign. Most of the patients were of the severe type, manifesting marked anemia and debility, and suffering from numerous relapses while in the hospital, even when receiving from 25 to 30 grains of quinine daily. Of 8788 cases, 61 per cent had benign tertian parasites in their peripheral blood, 23 per cent malignant subtertian, and 16 per cent both benign and malignant subtertian parasites. The average period in the hospital and convalescent camps was 51 days, during which time the blood was examined at weekly intervals and the patients kept on routine daily quinine treatment. What they call "parasitological relapses" occurred during this period of observation in 24 per cent of the benign tertian cases, 11 per cent of the malignant subtertian cases, and 39 per cent of the mixed infections. One of the reasons that they assign for the frequency of relapse and resistance to treatment is that the military campaign was a most strenuous one carried out by unacclimated individuals, who, therefore, had their vital resistance materially impaired.

It became evident to them that in addition to using quinine it would be wise, if possible, to get some idea of whether other drugs, comparatively newly introduced into medicine, would prove more efficient. They therefore carried out a series of investigations with neoarsphenamine, arsphenamine, neokharsivan, kharsivan, and galyl. The dose of arsphenamine was usually half the amount commonly given in the treatment of syphilis, namely, 0.3, and in the case of the neo preparations 0.45. Galyl was given in the dose of 0.2. The intravenous injections were made at weekly intervals at first, but subsequently it was found that they could be given on alternate days for three or four injections with safety, and in one case a series of 14 intravenous injections of the above dose of galyl were administered during an inclusive period of 22 days. Altogether they employed several thousands of intravenous injections of these preparations without a single fatality, and they therefore believe that the use of these arsenical compounds does not involve any special risk.

It would appear to us that they must be safer than intravenous injections of quinine, as we doubt whether such injections could be given frequently to so large a number of patients without some accident.

It is interesting to note that certain conditions, or symptoms, induced by the malarial infection were greatly improved by this line of treatment, although theoretically they might be supposed to contraindicate

them, as, for example, tachycardia and cardiac dilatation, which probably were the result of the anemia and toxemia. Thus in 154 cases suffering from these conditions, there was not a moment's anxiety induced by this plan of treatment so far as the heart was concerned. They found that in a series of over 790 injections a pyretic reaction occurred only seven times, but they believe that where there are renal complications the injections should not be given. They did, however, find that vomiting is a fairly frequent symptom of reaction after injection, and therefore believe that severe vomiting, diarrhea, or obstinate constipation should be corrected before an injection is given. All patients should have complete rest in bed for at least twenty-four hours before an injection, given a light diet, and have the bowels opened by a purgative pill, such as the compound pill of colocynth, followed by a saline in the morning. Breakfast on the morning of the injection should consist of one egg, two slices of toast, and a cup of tea, and should precede the medicament by at least four hours. No food should be given till four hours after the injection, when tea and toast may be used, and a full meal should not be allowed until the next day. Should albumin or sugar be present in the urine after the patient has rested in bed for twenty-four hours, the treatment should not be carried out.

They did not find that rigors often occurred from injections, but a few cases complained of congestive headache.

The chief advantage obtained by this method of treatment in the opinion of these clinicians has been a great modification in the severity of malarial manifestations, and the production of a distinct tonic effect so that anorexia, lassitude, and debility soon gave way to a feeling of well-being, and shortness of breath disappeared. They also found that splenic enlargement rapidly diminished, and in cases in which enlargement of the liver was marked, with jaundice, rapid improvement usually followed the first injection, although one would have supposed that the state of the liver might have increased the patient's danger rather than diminished it. Great improvement also occurred in those patients who seemed to be suffering from a dry bronchitis.

Another point which they consider of importance is that these drugs are of considerable diagnostic value in differentiating the benign from malignant forms of infection since the benign forms were almost invariably conquered.

So far as the prevention of relapses is concerned, these preparations give somewhat disappointing results even when they are combined with quinine, and if the case is one of malignant subtertian malaria, quinine must be employed in addition because they believe that these arsenical preparations have little destructive action on these parasites as compared to quinine.

Appended to their paper is a summarization of their views as follows:

1. Neosalvarsan, salvarsan, neokharsivan, kharsivan, galyl, administered intravenously, may be employed with safety in the treatment of all forms of malaria, provided the doses and methods recommended herein and the precautions enumerated are fully observed.

2. These preparations, in the doses recommended, exert a marked parasiticidal action on the benign tertian parasite, thick blood smears, showing numerous parasites, usually becoming negative within twenty-four to thirty-six hours.

3. These preparations have no definite parasiticidal action on any stage of the malignant subtertian parasite. When used in addition to quinine, the action of the latter is intensified and the progress toward recovery is much more rapid.

4. Generally speaking, the tonic effect of these preparations is well marked in all cases of malaria; anorexia, lassitude, and debility soon give way to a feeling of well-being, while tachycardia and shortness of breath, consequent upon anemia and cardiac dilatation, rapidly improve. Splenic enlargements disappear with remarkable rapidity.

5. The employment of these preparations is recommended, in addition to quinine treatment, in chronic resistant infections

and malarial cachexia. Three or four injections at weekly intervals are recommended. Freedom from relapses cannot be promised even after numerous intravenous injections. In regard to the preparation of the solutions and technique of administration, the usual methods are followed in each case.

6. Soamin exhibits no parasiticidal action on the parasites of either benign tertian or malignant subtertian malaria. Its beneficial action is confined to the breaking down of the resistance of chronic infections to quinine.

7. Tartar emetic has no demonstrable effect on the sexual or asexual forms of the parasites of either benign tertian or malignant subtertian malaria, and exerts no influence on the clinical course of the disease. The most rapid and certain method of eradicating crescents from the finger blood is adequate quinine treatment (30 grains daily) and arsenic.

8. Inunctions of mercury and antimony ointment do not appear to exert any therapeutic action in malaria.

RATIONAL MEASURES IN RENAL DISEASE.

There can be little doubt that chronic disease of the kidneys has, up until recent times at least, presented a problem to clinicians, both from the standpoint of diagnosis and treatment, which has been a difficult one to solve. Not so long ago practically every physician believed that the presence of chronic nephritis, and, for that matter, acute nephritis as well, definitely and positively indicated that the patient should receive little or no albuminous food, but nearly thirty years ago the writer of this editorial pointed out that there must be a fallacy underlying this rigorous method of treatment, at least in some cases, and that where the albuminuria was very profuse it might well be that the great loss of albumin through the kidney should be compensated for by seeing to it that the patient had a protein diet which, while not excessive, might at least tend to make up for the loss.

Our lack of knowledge of the problems involved has resulted in the use of many drugs in these conditions, and Basham's mixture has been administered until thousands of gallons have been dispensed with the hope that it might do some good.

The discovery that in many cases of nephritis, particularly if dropsy is present, there is a failure on the part of the kidneys to eliminate salts, caused many practitioners to try a salt-free diet in all cases of chronic nephritis just as they had hitherto employed a non-protein diet in all such instances, but it has become increasingly evident that in many patients there is no need of restricting the salt intake.

We think it can be truthfully stated that within the last five or ten years our conception of what might be called the pathological physiology of the kidney has been very materially increased. We do not believe that every case of chronic renal disease should be treated with a rigid dietetic régime on general principles, but only after it has been carefully investigated, and we also believe that in many cases a proper diet is infinitely more important than the administration of drugs. In this respect renal disease may be said to stand second to diabetes in connection with dietetic therapy.

While much work was done before the great war on the continent of Europe and in England in regard to the functional activity of the kidneys in disease, we think that one of the most helpful investigations, so far as the general practitioner is concerned, has been carried out by Mosenthal and those who have followed him.

Heretofore variations in renal output have depended so much upon variations in food intake and exercise that one examination could not well be compared with another. Therefore, Mosenthal wisely used what has been called a nephritic test meal in which the quantities of fluid, salt, and nitrogenous educts were practically definitely known. Indeed, it would appear that

this method discovers renal inadequacy earlier than the various dye tests which have been introduced or the more complicated chemical analysis of the urine or analysis of the blood. In this test diet, which must extend over a period of twenty-four hours at least, there is permitted food which gives an equivalent of about 14 grammes of nitrogen, 8 to 9 grammes of salt, and 1760 Cc. of fluid. As moderate amounts of meats, soup, tea and coffee are in the diet, there is necessarily present a considerable quantity of purin bodies which, as is well known, tend to stimulate the kidneys. It is important that over and above the salt which is permitted, the food of the patient shall not be salted in addition by the cook, but the salt should be doled out to the patient, to be added to his food at each meal in one-third the quantity already named. The patient, of course, is not allowed to take either food or drink except at regular meal-times, nor is any food or liquid to be given during the night or until after the morning voiding of urine. The patient is directed to empty the bladder at 8 o'clock in the morning and at two-hour intervals until 8 P.M., measure and keep the samples separate, after which time he is supposed to retain the urine until 8 A.M., when it is given the physician. A sample diet may be as follows:

Breakfast: Boiled oatmeal, 3 ounces, with one or two teaspoonfuls of sugar; milk, one ounce; two slices of bread weighing about one ounce each and a moderate-sized piece of butter; coffee 5 ounces, sweetened with a teaspoonful of sugar, and 8 ounces of milk, some of which may be placed in the coffee. Six to seven ounces of water are also allowed at this meal.

At noon-time a meat soup amounting to six ounces, a piece of beefsteak, 3 ounces, a medium-sized baked or boiled potato, a moderate quantity of green vegetables, two slices of bread with butter as before, a large cup of tea with a teaspoonful of sugar, to which may be added half an ounce of milk; a pudding made of tapioca or rice equal to about 4 ounces, and for drinking purposes 8 ounces of water.

At supper, which is usually given at about five o'clock, 2 eggs and the same quantities of bread, butter, tea, sugar, milk as already named, with a moderate helping of some stewed or fresh fruit, and 10 ounces of water are allowed as a drink, and nothing further is given until after 8 A.M.

If this diet is instituted it will be found that in a healthy man there is a very considerable deviation as to the specific gravity in the two-hour samples, amounting often to nine points or more. The night specimen, however, should average a specific gravity of 1.018 to 1.020. The volume secreted between 8 P.M. and 8 A.M. should not be more than 700 Cc. The total quantity in the twenty-four hours should be from 200 to 400 Cc. less than the amount of fluid ingested because of loss of liquid by the lungs, intestines, and skin. In the presence of disease the day urine ceases to vary in specific gravity over a wide range because the kidney is apparently unable to adjust itself from hour to hour to the demands made upon it, for at certain times it is manifest that the kidneys must be called upon to excrete more fluid and more solids than at others. So, too, the night urine is not limited to the normal of 700 Cc., but is in excess of this amount, the kidney endeavoring by secreting a large amount of water during the night to get rid of solids which have accumulated during the day because its threshold has been high. In the chronic contracted kidney therefore large quantities of urine are secreted night and day in the endeavor just referred to, the specific gravity being constant or nearly so both in the night and day samples. Examination of such a urine chemically will show a low excretion of nitrogen and a low excretion of sodium chloride in many cases.

In chronic parenchymatous nephritis the specific gravity tends to be high, but it is also fixed; that is, it does not vary greatly from period to period. There may or may not be a nocturnal polyuria, but there is a marked diminution in the output of sodium chloride, of water, but in many instances

the nitrogen excretion may be considered normal.

It is evident from what has just been said that certain facts in regard to dietetic treatment are now evident. In chronic interstitial nephritis in which the elimination of salt is impaired, this substance may be used in moderation, but need not be excluded. On the other hand, the very low excretion of nitrogen makes it wise as a rule to cut down on albuminous food to a very large extent, and this becomes the more important if an examination of the blood shows a high protein nitrogen content. But it is to be remembered that depriving these patients of all albuminous food often greatly weakens them. On the other hand, in chronic parenchymatous nephritis where a polyuria does not exist, but a scanty urinary flow is usually present, a distinct limitation of fluid intake should be insisted upon, and if there is any tendency to dropsy a salt-poor diet or a salt-free diet should be used, particularly if salt retention is proved by analysis; but it is rarely necessary to cut down largely upon his proteins, because such a patient eliminates his nitrogenous educts much better than does the patient with interstitial nephritis.

It is not to be forgotten in such cases that a condition exists which is somewhat akin to that which is present in diabetes, in which the body destroys itself to obtain what it needs for its vital processes. If the patient is deprived of all nitrogenous food he utilizes his own body protein, for in a normal body every man requires not less than two ounces of protein to maintain his nutritional balance. When Janeway, not long before his death, said that to deprive every patient with albuminuria of meat is evidence of colossal ignorance or inexcusable mental laziness, he emphasized a point which should never be forgotten. Every practitioner of experience will probably remember cases of nephritis in which patients rapidly lost strength and vigor when put upon a meat-free diet, and rapidly regained them, at least for a time, when allowed to partake of albuminous food.

In the paragraph above we stated that these patients might be allowed as much as 2 ounces of protein a day. This amount is contained in about three pints of milk, 6 or 7 eggs, and half a pound of lean meat, white or red.

Many years ago we pointed out that the strict milk diet in nephritis was a grave mistake. The excess of fluid cannot be gotten rid of in parenchymatous nephritis, and exaggerates the polyuria of interstitial nephritis; it burdens the digestive tube with an excess of liquid and of protein and fat. It does not provide the normal amount of carbohydrate, but exaggerates the amount of protein to twice the amount which a man needs in twenty-four hours.

It is not to be forgotten that a patient who is placed on a pure milk diet must ingest from four to six quarts of milk in twenty-four hours to obtain the necessary number of calories upon which to live. If he does not receive this amount, he is bound to turn upon his own tissues and destroy them in the process of maintaining vital function.

We have also repeatedly pointed out in these columns that the common idea that red meats are more deleterious than so-called white meats has long since been given up by those who are fully informed in matters concerning renal disease.

IS CASTOR-OIL AN OXYTOXIC?

This question is asked by Cooper in the *Journal of the Arkansas Medical Society* for December last, and he seems ready to answer it in the affirmative, quoting certain authorities in support of his views, and receiving support from some of those who discussed his paper when he read it before the Arkansas Medical Society.

He admits that his introduction of castor-oil as an oxytoxic was the result of an interview with an old negro midwife, and that taking this hint he has employed this purgative constantly ever since with results which are encouraging. In his hands, however, castor-oil is used over a much longer

period of time than is common with many obstetricians. Thus it has been his habit to state to a patient that if she wants an easy labor she should begin about two weeks before the expected time and take two tablespoonfuls of castor-oil every night, with another dose on the day that labor begins. Cooper's observation is that this shortens the first stage materially, the cervix rapidly and painlessly dilating.

There can be no question that long before the negro midwife suggested to Cooper this use of castor-oil many practitioners had been prone to employ it, but usually, we believe, it has been used with the idea of starting labor when it seemed to be dilatory, and in a single dose; in other words it has been employed by many to precipitate labor when everything seemed ready and it failed to occur.

The interesting point arises as to whether castor-oil, over and above its effect of moving the bowels and thoroughly emptying the rectum, possesses any direct or indirect influence upon uterine contraction and upon cervical dilatation. If its influence depends solely upon its purgative properties, it is surprising that other purgatives are not generally used for the same purpose. Possibly at some future time, as the result of experimental investigation, it will be proved that this clinical application of the oil has a better reason for its employment than the mere supposition that it acts by emptying the intestine.

ABDOMINAL PAIN IN CHILDREN.

It is a fact well known to all practitioners that even adults are often incapable of accurately localizing or orienting pain which is felt in the abdominal regions, and this is still more true in the case of children, who by reason of lack of experience and inability to express themselves may readily mislead the physician.

It is well to bear in mind that there are a number of conditions which will cause a child to complain of pain in the abdomen. Some of them arise outside the abdominal zone and some within it. Amongst the extra-abdominal conditions which are always to be considered is spinal caries, which is probably present in many cases which are overlooked. Where there is lateral deformity the diagnosis may be easy if the back is examined, but where the difficulty causes some anteroposterior change, this condition may be readily overlooked, the more so as the pain may develop sharply when the condition in the vertebral column is as yet very young. Careful inspection and palpation with the development of a painful point, or points, in the spine, and possibly that great addition to physical examination, the use of the *x*-ray, will clear up the diagnosis.

Occasionally, too, a very small umbilical hernia which only appears at times, and which consists chiefly in a small portion of the omentum being pinched, will be the cause of abdominal pain, while hip disease in its early stages, either tuberculous or non-tuberculous, if it occurs in the right side, may lead to a diagnosis of appendicitis. So, too, a pneumonia at the base of the right lung, often associated with a certain degree of pleurisy, will often induce what is apparently severe pain on the right side of the belly, not alone in the neighborhood of the liver, but in the neighborhood of the appendix as well. The sudden onset of pain, often associated with vomiting and with the presence of a marked leucocytosis, greatly increased by pressure below the diaphragm, may readily lead to a diagnosis of acute appendicitis, but here a careful examination of the chest and the high temperature, which is commonly present in pneumonia and rare in appendicitis, will help to make the differential diagnosis. Again, in some cases pericarditis will give rise to epigastric pain, moderate fever, and some abdominal rigidity.

This whole subject is discussed in a very clear manner by Hutchison in a recent issue of the *British Medical Journal*. Speaking of the intra-abdominal causes of pain, he divides them into cases of sudden or "catastrophic" pain and cases of chronic

or recurrent pain. By catastrophic cases he means those in which the onset of the pain is so sudden that it is almost like a stroke out of the blue. Cases of this nature he thinks are less common in children than they are in adults, for perforation of a gastric or duodenal ulcer, acute pancreatitis, and hepatic colic are exceedingly uncommon in children as compared to their frequency in adults. A very rare condition is Henoch's purpura with abdominal extravasation. Renal colic is also rare, but does occur in children. Occasionally children suffer from a sharp onset of pain as a result of eating something exceedingly indigestible, as, for example, green apples. In such cases the history of the case, the application of heat to the belly, giving an enema, combined with watchfulness as to some more severe trouble, is the course to be pursued.

In appendicitis pain is usually a very early symptom, and in children is nearly always accompanied by vomiting, but the vomiting is a secondary symptom and does not persist as in cases of cyclic vomiting. An important part emphasized by Hutchison is that when looking for muscular rigidity of the belly wall in children light palpation is more important than in the case of the adult.

In acute intestinal obstruction there is nearly always pain of a severe character, but in some cases of intussusception pain may be entirely absent, fever absent or very moderate, and the patient may not seem at first to be severely stricken. There is usually abdominal rigidity, and in such cases it may be wise to give a whiff of chloroform to relax the abdominal wall when the typical sausage-shaped tumor can be felt on deep palpation.

Other conditions which may be thought of are ordinary wind colic, which probably occurs less frequently than it is said to occur, and is always associated with a certain amount of tympanites and expulsion of flatus.

Worms do not often cause real abdominal pain, although when roundworms are present in very large numbers so that they produce intestinal obstruction, pain may be a symptom of their presence.

In cases of tuberculosis of the mesenteric glands the appearance of the child, its history, and the finding of these nodules by palpation or by means of the *x*-ray will enable a diagnosis to be made.

PERITONITIS.

Well within the memory of many practitioners peritonitis, except in its strictly localized form, had with few exceptions a fatal termination. Perhaps the period of its largest incidence and greatest fatality was that which ushered in the first steps of abdominal surgery. The peritoneal cavity was regarded as the most sensitive to microörganism invasion and the least fitted to resist; to guard against even possible contamination through the medium of the air, Lister's carbolic spray was used with such enthusiasm that after a busy day the urine of the operators and assistants was often smoky.

At the present time peritonitis is not regarded as of hopeless prognosis at any stage, unless when the patient is seen he has already received his fatal toxic dose and his death is inevitable, even though the processes causing it are stayed.

As a result of experimental investigations and clinical observations and of surgical practice the feeling has become general that the peritoneum is an extremely resistant structure, slow to infection, prompt and efficient in its defence, and that the patients who die with symptoms of acute peritonitis perish, not because of this inflammation, retention of pus, and absorption of the products of infection, but from a combination of causes, among which and of even more importance than absorption from the peritoneum is absorption of poisonous matter contained in the paretic intestines and incubated there under circumstances most favorable for bacterial growth. The action of intestinal bacteria on the proteins and their split products

produces a poison of extreme virulence. When, in addition to the intestinal paresis of peritonitis there is interference with the blood supply of the gut, such as is most marked for instance in cases of internal strangulation, the lethal effects are more prompt in development than when obstruction is uncomplicated with a condition that predisposes to lowered vitality or necrosis of the intestinal mucosa.

That dehydration is a factor in causing death is generally recognized and accepted, though possibly without abundant proof. In any event it is one of the reasons which has prompted the giving of enteroclysis and hypodermoclysis, and the clinical results of these procedures are sufficiently good to justify their continuance. There is also experimental evidence to show that the poisonous substance is due to preverted activity of the secreting structures of the pancreas and duodenum. In any event it seems to be demonstrated that the cause of death is in the main the absorption from the intestinal canal of toxic substances, from which it would appear that in cases of advanced peritonitis, in addition to the surgery needed for the stopping of the process and securing of adequate drainage, there should be a means devised by which the toxic intestinal content might be evacuated. It is on this subject Collins (*Minnesota Medicine,* January, 1921) contributes an article in which he urges this procedure. He quotes a paper by Cooney, who drained by catheter in cases of typhlitis and perityphlitis with 22 successful cases. In the absence of details it would seem that a similar successful series without such drainage might be reported by many surgeons.

Collins employs a large-sized rectal or stomach tube or other non-collapsible rubber tube, with a quarter-inch lumen or larger, and quarter-inch windows are cut at intervals of about three-quarters to one inch apart in the sides of the tube from tip to about five inches above the tip. The customary purse-string is placed around the appendix base, the appendix amputated, and the stump inverted. The tip of the tube is then pushed in through the stump, and deflected slightly and guided through the ileocecal valve into the ileum and pushed forward, until the last or upper hole in the tube is well within and past the sleeve of the appendix stump. The purse-string is then drawn and tied about the tube, and that part of the cecum is anchored by stitching to the peritoneum at the edge of the wound, interposing omentum between gut and peritoneum. Peritoneal drainage is then provided as may be deemed necessary, the intubation tube occupying one angle of the wound, while the peritoneal drainage occupies the other angle. The holes in the sides of the intestinal tube provide vents for both the small and the large intestine. The ileocecal valve is thus held open.

Through the lumen of the intestinal tube a small-sized rubber catheter, with blunt nose, may be introduced to the full length of the intestinal tube, and even beyond the end of it into the small intestine, for the introduction, by funnel or syringe, of saline solution or liquid nourishment, according to the method of treatment which may be desirable to follow. Gases and liquids have access to the outside from either small or large intestine by means of the perforations in the sides of the intubation tube. After the removal of the tube the sleeve of the appendix stump collapses and healing takes place readily, as in the inverted gall-bladder fundus following drainage. Should the sleeve of the stump be everted in drawing out the tube it should be at once inverted and that part of the wound strapped together.

In the larger centers in most of the hospitals deaths from appendicitis are rare because of early operation and prompt diagnosis. The complication of appendicular inflammation with diffuse peritoneal inflammation and ileus is also rare, although it occurs more frequently than it should.

Given a gangrenous appendix and a belly full of turbid fluid the results are usually good even in the absence of intestinal

drainage. Where the case is complicated by profound toxemia, vomiting of the recurrent type, and an absolutely quiet belly, continued drainage of the intestinal content has many times proven life-saving.

MORTALITY AND END-RESULTS IN SURGERY.

One of the reasons for the delay in standardizing surgical procedures is incident to the fact that surgeons as a whole have been singularly remiss in reporting both their mortality and their end-results. By and large, current literature is made up of reports of individual cases, favorable results in small groups of cases, exploitation of inadequately tested methods or drugs, description of abnormalities of an unusual nature, rehash of current and accepted knowledge, futile animal experimentation, descriptions of technique which when it is good was probably known and practiced by the early Egyptians, but few frank and truthful statements of mortality and end-results.

Therefore the paper by W. J. Mayo (*Surgery, Gynecology and Obstetrics,* February, 1921), who is recognized by the profession as singularly endowed with sound common sense uninfluenced by the fads of the day, gifted with that spirit which leads him to the prompt recognition and adoption of every method which will increase efficiency, and incapable of that self-deception more pernicious in a writer than even the intention to deceive; such a communication is of more than passing value to the surgeon who has lost himself in the glory of his work.

In the interest of the profession at large rather than in that of his hospital or himself, Mayo for the past twenty years has charged all deaths in St. Mary's Hospital to operation without regard to the length of time thereafter and the actual cause of death. In 1919, 10,280 operations were performed by ten surgeons working under similar conditions, with a mortality of 1.7 per cent. Five thousand, six hundred and seventy-one of these operations were performed for conditions involving the abdominal cavity. The 265 operations performed on the ovaries and Fallopian tubes, for cancer of the ovaries, all types of ovarian cysts, tuberculosis of the tubes, extrauterine pregnancy, pus tubes, infections, etc., gave a mortality of 0.7 per cent.

The end-results were not comparable to the low mortality. There were serious neuropathic sequelæ, and an intensive study of conservative methods by which such sequelæ can be averted is relatively of greater importance than the study of the mortality.

Five hundred and thirty-nine hysterectomies were performed with a mortality of 1.6 per cent. For other than neuropathic reasons the end-results are not entirely satisfactory. Subtotal hysterectomy does not give such good end-results as total hysterectomy. The latter rarely has any complaint following operation.

Sir Berkeley Moynihan is quoted to the effect that statistics can be made to tell anything, even the truth. Ninety-six of the 539 hysterectomies were performed for carcinoma of the uterus, without a death. The remarkable effect of radium in certain cases of cancer of the cervix has revealed an agent which can be applied more or less successfully to a large group of advanced carcinomata of the cervix that formerly gave rise to a high operative mortality.

The treatment of carcinoma by radium previous to operation has much to commend it.

Over one thousand cholecystectomies with a mortality of 1.6 per cent. This operation has to a large extent taken the place of cholecystostomy.

One hundred and thirty-nine operations were performed for stones in the common and hepatic duct, with a mortality of 8.6 per cent, the latter due to late infection and neglected cases. By the use of preliminary transfusion, in the restoration of the calcium content of the blood to normal, the coagulation time of the blood has been reduced from as high as thirty minutes to less than twelve minutes. Careful dilatation

of the duodenal end of the common duct permits bile drainage and may enable stones overlooked in the hepatic duct to pass out with the flow of bile. In a small percentage of cases olive-shaped or cartridge-shaped pigment stones reform in the common duct following choledochotomy and require a second or even third operation for final cure. The value of bile drainage to the surface following operations of the biliary apparatus has been overrated.

Eleven hundred and eleven operations were performed on the duodenum for acute and chronic ulcers and their complications, with a mortality of 0.9 per cent. The end-results were satisfactory in 95 per cent of the patients with demonstrable ulcers.

More than two hundred gastroenterostomies have been cut off which had been made needlessly because of mistaken operation. The results of excision of large ulcers because of hemorrhage and end-to-end union of the duodenum to the stomach by means of catgut have been so excellent as to predict an early return to the more localized treatment of duodenal ulcers, as devised by Finney, without recourse to gastroenterostomy.

One hundred and sixty-three operations were performed for gastric ulcer and its complications, with a mortality of 2.4 per cent. The end-results were about 85 per cent satisfactory. Gastroenterostomy often fails to cure gastric ulcer unless the lesion is obstructive at the pyloric end of the stomach, and excision often fails unless the ulcer is small at the cardiac end. After a suitable specimen is removed for frozen-section diagnosis, excision by cautery with gastroenterostomy is the logical procedure, and in the large calloused ulcer partial gastrectomy is the operation to be preferred.

One hundred and five resections of the stomach were performed for cancer, with ten deaths. Surgical operations were performed on 63 patients with carcinoma of the large intestine, with eleven deaths, and on 70 patients with carcinoma of the rectum and rectosigmoid, with seven deaths.

Intestinal carcinoma does not involve glands early, and often when the glands are apparently involved they show only infection. Moreover, fixation and involvement of surrounding tissues may still leave the disease local. Mayo has operated on all possible cases. He is not disposed to turn such as are within reach of the hands over to the radium expert, since this latter agency has thus far not shown good results, though palliation is many times noted.

Preliminary colostomy for the purpose of cleansing the part operated upon or keeping the wound clean after operation, and especially for the use of radium in the growth before operation, effects a reduction of mortality and improves end-results.

The two great causes of death following operation in these cases are sepsis and secondary pulmonary complications. The latter are just as frequent under local as general anesthesia. The mere act of handling such infected masses may set free cancerous or septic emboli and cause pulmonary complications which are the immediate perhaps rather than the primary cause of death.

As to end-results few operations on the human body for cancer give those as favorable as are observed after operation on the large intestine. Fifty per cent of the patients operated on more than five years ago have lived more than five years. All types of operation resulted in cures. This is equally true of all types of operation for cancer of the rectum. A controlling factor was glandular involvement; 70.8 per cent of the patients without glandular involvement by cancer were cured.

Progress in Therapeutics

Medical Therapeutics

Scabies, a Possible Menace: Its Recognition and Treatment.

In the *Ohio State Medical Journal* for January, 1921, MILLER states that unless thoroughly attacked scabies is obstinate. The old adage "make haste slowly" certainly applies to the treatment of scabies. The French "while you wait" method seems indeed thorough. At the St. Louis Hospital in Paris the patient is given a bath containing 90 grammes of potassium sulphide in thirty gallons of hot water. After remaining for one-half hour in the bath, he is scrubbed with green soap, using a hand brush; then he reclines for a further period in the bath; in the meantime his clothes have been disinfected. He is then rubbed with sulphur ointment and dismissed. It is not uncommon to see the patient return in a few weeks or months for another sulphur "cure."

A more satisfactory method, in his opinion, is the proper and thorough rubbing by the patient himself. The rubbing is done without the supervision of an attendant, if the clinician has confidence that the work will be done thoroughly. Without a preliminary bath the patient is given an ointment containing 5 per cent balsam of Peru and 10 per cent of sulphur. A minimum of fifteen minutes is taken for the rubbing of each patient. The ointment is rubbed in thoroughly on every portion of the entire cutaneous surface; not even the smallest part is missed, except the face and scalp. The rubbing is repeated for the next three days. A cotton union suit is worn in order to retain the ointment, and although disagreeable, is not removed at bedtime. Sometimes it is necessary to cover the hands and feet, especially in very young children, and this is done, of course, by wearing suitable gloves and stockings. Especial attention is given to the genitals, buttocks, and breasts while rubbing. Great care must be exercised while rubbing not to cause a sulphur dermatitis. On the fifth day a warm bath with plenty of soap is ordered, together with a change of clothes. All articles of clothing must be carefully disinfected. During the course of rubs inquiry is made of other members of the family for suspected scabies. It is this lack of thoroughness in which lies the fault of the French system, as outlined above. Following the bath the patient reports for inspection, and if there is evidence of an irritation of the skin or itching, the patient is given a dusting powder. If the irritation of the skin from vigorous rubbing or if the irritating effects of the sulphur are at all marked, a bland ointment answers admirably. Occasionally it may be necessary to repeat the course of sulphur rubs, or a 2-per-cent betanaphthol ointment may be substituted.

The Source of the Uric Acid Excreted in the Urine After Atophan.

In the *Quarterly Journal of Medicine* for October, 1920, GRAHAM in his conclusions states:

1. The extra uric acid excreted in the urine after atophan cannot come solely from the blood, as the total amount of uric acid in the blood is much too small.

2. If the water of the body tissues contains uric acid in the same percentage amount as the blood there is sufficient uric acid in the body to supply the extra uric acid.

3. The evidence that the uric acid already deposited in the tissues can be redissolved is very weak.

4. Atophan, sodium salicylate, aspirin, or sodium benzoate should be given to gouty people for two or three days of each week.

Infantile Scurvy.

In the *Archives of Pediatrics* for January, 1921, AIKMAN states that it may be well to mention the diseases with which scurvy is often confused. Rheumatism: As Kerley says, "the age of scurvy is not the age for rheumatism." Poliomyelitis has been thus diagnosed. Multiple neuritis, syphilis: If doubtful a Wassermann reaction will clear up the diagnosis. Koplik reports a case in which hemorrhages of the bowel were mistaken for intussusception. He also warns that scurvy be watched for in cases of enteritis that pass pure blood. Osteomyelitis, periostitis, joint or spinal diseases must also be considered. One of Aikman's cases had been diagnosed as "hip-joint disease."

The disease may be prevented by a close supervision of the diet of the child and the administration of an antiscorbutic, if sterilized food has to be given as the chief article of diet. Early administration of orange juice, at six months or before, is to be advised, if sterilized food is to be given. Tomato juice may be used, if oranges are not available. The same foods are to be used in the treatment. In time, no doubt, dried orange juice will be available. In no disease is recovery more spectacular than in scurvy. A few days change an irritable, sickly child into a well infant. All that is necessary is the diagnosis followed by proper diet.

Empyema in Children.

In the *Archives of Pediatrics* for January, 1921, HODGE, in discussing the treatment of empyema, says that to sketch in outline the changes that have come about recently and the chief reasons therefor will be helpful.

There is little doubt that in the past most of us have erred at times in doing too severe an operation on these children, particularly the younger ones, and often in operating too early. In the streptococcus type, with thin fluid and few or no adhesions, early rib resection or intercostal incision has made too sudden and severe a change in intrathoracic pressure. The aim should be to limit the size of the open pneumothorax. This is especially true where the patients are still ill with pneumonia. In such cases aspiration relieves pressure and dyspnea and tides the patient over until adhesions have formed and the general condition improved. Then formal operation becomes far less dangerous. The aspiration may be repeated several times at intervals of a day or more.

Aspiration as a curative measure has not been successful and is no longer used. To prepare for a safer subsequent operation, it is a very valuable procedure. It can and should be done by the physician in attendance or in consultation with the surgeon. Aspiration with injection of formalin-glycerin solution was advocated by the late John B. Murphy. While it has cured some small collections, usually of pneumococcic origin, it is too uncertain to be recommended.

Intercostal incision is the operation most generally applicable in children, often preceded, as stated above, by aspiration for temporary relief. Formerly rib resection was preferred because the narrow intercostal space in children did not permit finger exploration of the cavity and drainage tubes were in danger of being blocked by rib pressure. Too large or stiff a tube also can cause rib necrosis. The change in opinion has come about largely as a result of the great advance of the war period—the Carrel-Dakin method.

Where formerly an acute empyema was never irrigated, now flushing with the sodium hypochlorite solution is generally used. It is well first to test for a lung communication with salt solution before starting the hypochlorite. Like all other good things the Carrel-Dakin method can be abused and should be used with brains. Fundamental surgical principles must still be observed. Most failures are due to such mistakes. The essential requisites for healing are sterilization of the cavity and lung expansion to obliterate the pneumothorax and restore negative pressure. To the former of these the Carrel-Dakin method

is a valuable aid. A good-sized drainage tube for overflow, several small tubes for inflow, and the two hourly introduction of a quantity of solution somewhat less than the measured capacity of the cavity—these are the chief essentials.

A useful sequence is to use tube drainage in an intercostal incision for a few days. If the age and condition of the child permit, it is an advantage to make this of the siphon type, thus limiting the pneumothorax and saving dressings and disturbance. Then the tube is supplemented by the Carrel-Dakin irrigation. The sodium hypochlorite solution has a marked solvent action on the masses of fibrin found in the pneumococcal cases. Its most enthusiastic advocates assert that it dissolves adhesions even when more or less organized, thus aiding lung expansion.

Rib resection is reserved chiefly for cases in which intercostal incision has been inadequate and for old cases with sinus or rib necrosis. It has often to be combined with freeing adhesions, sometimes amounting to partial decortication of the lung. The after-treatment is conducted along lines identical with that of the simpler operation.

Both intercostal incision and rib resection can be done very readily with local anesthesia infiltration. In the presence of marked fright or when adhesions must be broken up, general anesthesia is necessary, preferably gas-oxygen. The prone position, introduced by Elsberg, has been helpful in his experience.

Along with these operative measures, exercises to expand the lung should be stressed as early as possible. Too frequently this is neglected by surgeons. Whether in the form of toys, balloons, soap bubbles, masks, water bottles, or by crying, it is of great value and often turns the tide in favor of expansion and healing.

By this scheme of graduated operative treatment more lives will be saved, and mutilating operations for collapse of the chest wall will be almost entirely avoided. The Schede and Estlander operations are seldom necessary in children, and we may now hope for their complete disappearance. With their attendant ills of deformity, contracted chests and lateral curvature, they can well be spared.

A point often not sufficiently realized is the great drain on the child's metabolism through the profuse discharge in empyema. This should be met by prompt raising of the food intake. The ways and means of introducing the necessary calories are very familiar. To this factor, as well as to inability properly to expand the lung, may be attributed the observation that babies often do well for a week after operation and then fail. Most surgical troubles after operation are due to poor drainage and imperfect sterilization of the cavity. Lung abscess, pneumonia in another lobe or opposite lung, pericarditis, and other complications do occur. But the burden of proof is on the surgeon to show that the source of trouble is not in the drainage tract.

The Neuroses and Their Treatment.

In the *New Zealand Medical Journal* for December, 1920, FENWICK states that the psychasthenic types, particularly the obsessional neurosis cases, and the fixed phobias, agaraphobia, claustrophobia, etc., are difficult to treat, and it is in these cases that psychoanalysis becomes a necessity. It is with them that suggestion has failed. Although Déjerine stated that persuasion was the only rational form of psychotherapy, neither he nor his followers have proved that suggestion therapy can cure in these cases. Neither will any extent of reasoning with the patient do so. Tell the patient who fears that he is going out of his mind, who is afraid of open spaces or of walls, that his fears are groundless and unreasonable, and he will agree that he has known that all the time, and state his fears remain nevertheless.

There is only one way to get at these patients, and that is to scrutinize their past histories and dig up the emotional trauma or shock or repression that originated the present distorted emotional reaction, *i.e.*, the fear. Bring this original incident to light and make the patient talk about it

freely. Once he can do this, once the repression is gone, the obsession will go too, for chronic fear or dread is an involuntary, not a voluntary, mental activity. Having got thus far one must reëducate. For example, he had a patient who dreaded hills. His dread had become an obsession so deeply rooted that it had become a physical impossibility for him to climb a hill. It needed no skilled psychoanalysis in this case to get back to an emotional shock he had once had while climbing a hill, though he had forgotten the incident and in no way connected it with his condition. This incident was discussed with him for several days, and then, and not till then, explanation to him of the cause of his condition was followed by suggestion and assurance that he would now be able to climb hills without any dread or other ill effect. Then the process of reëducation was commenced, and he walked up neighboring hills, first in the company of other patients, and then by himself. He left the hospital completely cured. Suggestion, or reëducation, could not accomplish this result by itself. The essence of the treatment is the reacting of the original trauma.

In conclusion, with regard to the application of our limited knowledge of endocrinology to the treatment of neuroses, Fenwick says, to begin with, the first essential is that we must realize that endocrinological treatment is symptomatic only. If we recognize this limitation, judicious administration of certain gland products should prove a valuable help in treatment.

In a paper on "Hyperthyroidism" Hardwick Smith outlined the first practical advance made in endocrine gland studies by Eppinger and Hess, who, dividing individuals into one of two types, vagotonics and sympathicotonics, noted that the vagotonics gave a violent reaction to the injection of adrenalin. Langdon Brown, while admitting the possibilities in this work, hesitates to believe in the existence of these two types, and, amongst others, he advances one most striking argument against the theory. Pilocarpine, Eppinger and Hess contend, stimulates the vagus; it is the drug that causes the excessive reaction in vagotonia. Pilocarpine causes sweating. Anatomical evidence shows that the sweat nerves are part of the sympathetic system, not the autonomic, vagus system. Eppinger and Hess, to fortify their theory, say that the sweat nerves, anatomical evidence notwithstanding, must be part of the vagus system. The assumption is unjustifiable. Wounds in the neck, severing the cervical sympathetic chain, have produced absolute paralysis of the sweat glands of one side of the face and other parts supplied. Another statement made by Eppinger and Hess is that the diaphragm is low in vagotonics, and to consequent lack of support of the heart they attribute certain cardiac neuroses. The explanation might be helpful, could they prove that the diaphragm is innervated by the vagus, not by the phrenics.

Stimulation of the sympathetic serves to prepare the body for a struggle and to make it ready for flight or defence. Shock and stimulated emotion are the causes of this preparation. The same cause which disturbs mental activities, setting them into violent agitation or holding them in abeyance (as when paralyzed with fear), stimulates also the sympathetic nervous system. The pupils dilate, the heart beats more quickly and more forcibly, and the sweat glands are more active. These actions are emotional responses.

Now, how can we apply this knowledge to the treatment of neuroses? It seems to Fenwick that the administration of endocrine gland extracts is really indicated in the asthenic types, *i.e.*, in true neurasthenia, and that it is contraindicated in the psychoneuroses. He does not believe that in disease the distinction of vagotonics and sympathicotonics is a practical one. He thinks we have to deal with sympathicotonics and sympathasthenics, that the disorders are of the sympathetic proper, not the parasympathetic, autonomic or vagus system, and that these disorders are in the nature of underaction or overaction. In the cases of underaction we can do good by the administration of glandular extracts,

particularly suprarenal extract. For though all the endocrine glands are activated by the sympathetic system, and their secretions in turn stimulate the sympathetic nerves, it is the suprarenals that are most intimately associated with sympathetic nervous action.

He thinks that the use of endocrine gland extracts is not indicated, and in most cases is contraindicated, in all other types of neuroses, where it is evident that sympathetic action is excessive. The only cases of psychoneuroses in which endocrine gland extracts could be of benefit are those in which, from long-continued overaction, there is obvious sympathetic exhaustion.

It is his intent in this paper to urge the claims of those who suffer from neuroses and psychoneuroses, and to ask that we should endeavor to devote more time and consideration to these patients. In doing so, may we not possibly find a means of preventing certain organic diseases? He refers particularly to Graves's disease, or hyperthyroidism. It is surely recognized that some cases of this disease owe their origin to an emotional trauma. The sequence of events in such cases seems to be (1) emotional trauma, (2) overaction of sympathetic nervous system, (3) overaction of thyroid gland. Overaction of the thyroid gland leads to further stimulation and activity of the sympathetic, and the vicious circle is well established. Surely it is not unreasonable to claim that in some cases the reaching of this stage is preventable by dealing properly with, and teaching the patient to deal properly with, the underlying cause—the original emotional trauma.

If there is one particular class of patient that is doing much to build a reputation for the various kinds of unqualified practitioners who advertise themselves under a multitude of peculiar and puzzling names, it is the psychoneurotic. It is with such patients that these practitioners work their marvelous cures. The cures are, of course, cures of symptoms only, because the underlying cause is not sought for. But by their absolute assurance and by their methods of suggestion—quack methods as we call them—these people do cure their patients of many troublesome symptoms. To how much greater a degree can we obtain the same results, but more permanent, if we will only devote our time and trouble to these patients! Fenwick firmly believes that these patients drift to the unqualified practitioner just because of our indifference, or apparent indifference, and slighting of their troubles. Let us always remember that their ailments are to them very real and very terrible.

Effect of Chloroform on Ether Hyperglycemia.

In the *American Journal of Physiology* for January, 1921, Ross and DAVIS state in their summary that a group of dogs was anesthetized with ether for half an hour. The next day the dogs were anesthetized with the same drug for fifteen minutes. The blood-sugar changes were measured for the first fifteen minutes of anesthesia both times.

A second group of dogs was anesthetized with chloroform for half an hour, and the following day each was given fifteen minutes of ether anesthesia. The blood-dextrose changes the second day were measured.

A third group of animals fasted two days and was then treated the same as the second group.

Half an hour of ether anesthesia did not alter the glycemia of the following day, and did not decrease the hyperglycemia resulting from fifteen minutes of ether anesthesia.

Half an hour of chloroform anesthesia produced on the following day a glycemia lower than normal, an increase in blood dextrose due to fifteen minutes of anesthesia less than normal, and a hyperglycemia from fifteen minutes of ether anesthesia lower than normal.

A fast of two days preceding half an hour of chloroform anesthesia produced on the following day a still lower glycemia and still less reaction to fifteen minutes of ether anesthesia than occurred in non-fasting dogs.

These results in conjunction with the conclusions of Davis and Whipple (2) that

the liver injury produced by chloroform is increased by a fast preceding anesthesia leads them to the following conclusions:

1. Ether anesthesia does not produce any injury to the mechanism of dextrose mobilization that can be detected the following day.

2. The injury to the liver cells produced by chloroform anesthesia reduces the glycemia of the following day and injures the mechanism of dextrose mobilization according to the degree of injury.

3. The hyperglycemia due to chloroform anesthesia is not due primarily to the direct action of chloroform on the liver. Probably chloroform, like ether, produces hyperglycemia chiefly through its depressing action on the internal secretion of the pancreas.

Quantitative Studies in Chemotherapy.

In the *Journal of Pharmacology and Experimental Therapeutics* for January, 1921, VOEGTLIN and SMITH state that six different brands of arsphenamine, including a German preparation, have shown approximately the same trypanocidal activity.

Slightly greater variations in activity were observed with six different samples of neoarsphenamine, the maximum difference being 80 per cent.

There appears to exist no relation between toxicity and trypanocidal action of arsphenamine and neoarsphenamine.

It is suggested that the alleged greater effectiveness of arsphenamine over neoarsphenamine in the treatment of human syphilis may be attributed to the fact that arsphenamine is precipitated at the hydroxyl ion concentration of the blood, in consequence of which the rate of its oxidation and elimination from the body is considerably diminished.

The study of the trypanocidal action of some alipathic arsenicals has confirmed the fundamental principle formulated from the previous study of the aromatic arsenicals, viz., that the trivalent oxides are the only forms of arsenic which exert a direct toxic action upon protoplasm.

Cacodylic acid does not possess any trypanocidal action even in lethal doses. Methyl and ethyl arsenic acid show a parasiticidal action only when used in doses approaching the lethal dose.

The Treatment of Acute Nasal Sinusitis.

In *The Practitioner* for January, 1921, THOMSON states that acute sinusitis is very amenable to simple treatment. No great technical skill and no heroic measures are required. It is more important to have the Hippocratic art of seeing that the patient and his *entourage* appreciate the advice given—for what they may despise as "only a cold in the head"—and of getting them to carry it out.

The indications are to facilitate the discharge and soothe the pain.

The patient should remain in bed, the whole head being wrapped in a large muffler, a woolen shawl, or the knitted headpiece known as "a Balaklava helmet." Warmth is applied to the affected forehead or cheek by means of a small india-rubber hot-water bottle, or a pocket flask filled with hot water, or the Japanese muff warmer called an "Instra."

A nasal inhalation of mentholized steam is taken for four minutes every hour or two hours. It is ordered thus:

℞ Menthol, gr. xxx;
Tincturæ eucalypti (vel spirit. vini rect.), f℥iij.

S.: To a jug half full of boiling water add a teaspoonful of this. Arrange a handkerchief as a cone over the jug, and sniff the steam up the nostrils.

Or this:

℞ Eucalyptol, f℥j;
Menthol, grs. xxx;
Tincture of benzoin, f℥ij.

(Menthol is not suitable in young children, and for those who find it too stimulating it can be omitted from the last prescription.)

The effect of these steam inhalations is to "clear the head." The turbinals contract, the mucosa is slightly anesthetized, there should be a free outpouring of mucus and

muco-pus with great relief to the "stopped-up feeling," the obstructed nose, and the loss of the sense of smell.

If the practitioner is skilled in nasal manipulation, he may, once or twice a day, for a few minutes place a pledget of cotton-wool in the middle meatus, after it has been squeezed out of a two-and-a-half to five-per-cent solution of cocaine, to which a few drops of adrenalin have been added. Or the patient may give himself, from a small spray, three puffs of this solution up each nostril two or three times a day. Between whiles the vestibule of the nose should be greased with vaselin, menthol, or boric ointment, or the proprietary nasal cream:

Boric acid, 16.00 parts;
Menthol, 4.0 parts;
Cocaine, 0.10 part;
Thymol, 0.05 part;
Oleaginous base, 144.00 parts.

Nose lotions, during an acute sinusitis, are useless, for the nasal chamber is generally too obstructed for them to penetrate far, and there is a risk of the lotion carrying the pus into uninvaded sinuses or into the middle ear. But as soon as the thoroughfare through both nasal chambers is restored, and they begin to discharge freely, an alkaline nose lotion—as warm as the hand will tolerate—can be carefully sniffed or sprayed into the nose. The following is soothing and can be used in a spray:

℞ Sodii bicarbonatis, gr. iij;
Sodii bibor., gr. iij;
Acid. carbolic pur., gr. j;
Sacchar. alb., gr. v;
Aq. ad, ℥j.

To an ounce of this spray the addition of a quarter of a grain of cocaine is very grateful and comforting, or the well-known nasopharyngeal soloid can be used. An alkaline gargle and mouth-wash will clear some of the discharge which escapes by the postnasal route, and will mitigate the unpleasant results of the mouth-breathing induced by the swollen turbinals during the acute stage:

℞ Acid. carbolic pur., ℥vj;
Sodii bicarb., ℥ss;
Glycerini, f℥xij;
Aquæ coloniensis, q. s. ad f℥iv.

S.: A small teaspoonful in a small tumbler of warm water as a gargle and mouth-wash.

Local Applications.—The special suction apparatus of Sondermann is sometimes helpful, and it may be imitated by the patient holding his own nostrils and then inflating his lungs, so as to exhaust the air from the nasopharynx. Brünings's electric light head-bath is convenient and useful, and it is a pity it is not more regularly found in stock with surgical instrument-makers, who might hire it out.

Medical Treatment.—A few doses of acetylsalicylic acid, phenacetine, antipyrin, or even morphia may be required. Thomson has found that the following mixture helps to make the patient comfortable:

℞ Sodii salicylat., gr. x ad xx;
Phenazoni, gr. v;
Spirit ammon. aromat., min. xv;
Elixir rubri, min. xl;
Aq. cinnamomi, q. s. ad f℥j.

Absorption of Local Anesthetics Through the Genito-urinary Organs.

In the *Journal of Pharmacology and Experimental Therapeutics* for January, 1921, MACHT states that as a result of his various experiments it is evident that local anesthetics are very easily absorbed through various organs of the genito-urinary tract, with the exception of the bladder. Of great scientific as well as practical interest is also the difference between the absorptive powers of the urethra as compared with the bladder. Whereas drugs are very easily taken up through the urethral walls, they are very slowly absorbed from the bladder. These experimental data agree very well with the experiences of both urologists and gynecologists, so far as he has been able to ascertain. The absorption of cocaine through the ureter and pelvis of the kidney is chiefly of scientific interest; and in view of the modern use of drugs, such as iodides, thorium, etc., in these structures, the subject may also be of some practical importance. Absorption through the prepuce is important from the surgical point of view, as local anesthetics are very widely employed in this connection, and their careless or excessive use may lead, and has led,

to toxic symptoms in patients. The absorption of local anesthetics from the vagina is also interesting, even though these drugs are not so widely introduced into that canal as other poisons are, such, for instance, as the antiseptics mercuric chloride, phenol, lysol, etc.

The local anesthetics—cocaine, alypin, and apothesine—were studied in regard to their penetration through and absorption from various genitourinary organs.

It was found that these drugs are more or less readily absorbed through the urethra, ureters, pelvis of the kidney, preputium, and vagina.

The Practical Gains of Clinical Cardiology Since 1900.

In the *British Medical Journal* of January 1st, 1921, GORDON, in speaking of treatment, states that Dr. Caton has added an important chapter to the subject of preventive medicine by showing how we may prevent many cases of incipient rheumatic endocarditis from passing into permanent valvular disease by prolonged rest in bed, the administration of sodium iodide, and the application of blisters.

Dr. Arthur Goulston, by his ingenious use of cane sugar, has given us a valuable aid in dealing with chronic heart failure. It is noteworthy that beet sugar is without effect and that the cane sugar must not be cooked.

The intravenous use of strophanthin in urgent cases has been found of unmistakable value. Theocin sodium acetate has proved its usefulness in dropsy which has not yielded to other diuretics. Brunton's insistence on the importance of morphine in the distressing dyspnea of late heart disease has promoted its general use in that condition, and the discovery of the immediate value of its hypodermic injection in acute pulmonary edema (which occasionally occurs in cardiac patients) has put a valuable weapon in our hands. In "soldier's heart" graduated exercise has expedited the generally slow recovery.

Strychnine has been unduly discredited. Surgical shock, in which it has been rightly replaced by pituitrin, is a different condition from ordinary heart failure, and although there are those who prefer injections of camphor in cardiac breakdown, we shall do wisely if we hesitate to discard from our therapeutics a remedy which the sober judgment of competent clinicians has so long relied on.

The use of salvarsan in cardiac syphilis appears to have special risks, and, if used at all, it should probably be given in smaller doses than ordinary.

In streptococcal endocarditis (the most frequent variety) he has learned that whereas antistreptococcal serum occasionally succeeds, streptococcal vaccines almost invariably fail. Standardized digitalis is a valuable advance.

Three surgical procedures require medical notice: Brauer's operation of "cardiolysis" is of service where a heart is gravely hampered by adhesions of the pericardium to the chest wall. Direct massage of the heart through the diaphragm, in cases of heart failure under operation, has been the means of restoring life. Incision of the pericardium seems at last to be recognized as a safer proceeding than the older paracentesis.

Etiology of 150 Cases of Bronchial Asthma.

In the *California State Journal of Medicine* for January, 1921, PINESS concludes his contribution as follows:

1. Asthma is a clinical manifestation produced by protein sensitization.

2. It is important that careful physical and laboratory examinations should be made before the diagnosis is established.

3. Most painstaking, careful history of the patient is a necessity, as it establishes the etiological factor in many cases.

4. Heredity is an important predisposing but not exciting factor in from 25 to 50 per cent of the cases.

5. Climate has very little bearing on the etiology excepting in the pollen and asthmatic bronchitis types.

6. Eczema, urticaria, and angioneurotic edema have definite relationship to the protein sensitive asthmatics.

7. It is possible with cutaneous tests to determine the etiology of bronchial asthma in 47 to 50 per cent of cases.

8. Multiple sensitization is common, particularly in the food and pollen groups. Sensitization to one protein in early life is apt to be followed by sensitization to other proteins.

9. Renal and cardiac diseases may complicate asthma, but the latter is a distinct and separate condition, not dependent upon the former.

10. Patients with a history of onset past thirty-five years of age rarely give positive skin reactions, but serum agglutination tests to staphylococcus pyogenes aureus occasionally give positive reaction and determine the cause.

11. There is no fixed relationship between cutaneous reaction, serum agglutination tests, and isolation of straphylococcus aureus from sputum or nasal secretions.

12. The relationship between the age of onset of asthma and sensitization of different types of protein is very important, but all ages are liable.

13. Endocrine dysfunction bears a prominent part in the etiology of asthma, particularly in the younger individuals, and should be borne in mind when the patient does not respond to specific protein treatment.

Action of Emmenagogue Oils on Human Uterus.

In the *Journal of Pharmacology and Experimental Therapeutics* for January, 1921, GUNN states that his experiments on the isolated human uterus and Fallopian tubes agree with the results of other observers on the excised uterus of other mammalia. It would seem that the emmenagogue oils in very small amounts have no action at all on the uterus. In higher concentrations such as could never be reached in the blood without producing dangerous, probably fatal, poisoning, they inhibit the uterine movements.

When abortion occurs after their use, it is probably an indirect result of the severe irritation and inflammation of the bowel and kidney. This may induce congestion and reflex movements of the uterus which may in some cases result in abortion.

The absence of specific stimulant action of these oils on the uterus renders them all the more dangerous poisons, as, after their failure in ordinary doses, large doses are sometimes taken, resulting in frequent poisoning, in a large proportion of cases without the production of abortion.

The Nasal Cavities and Asthma.

In the *Illinois Medical Journal* for January, 1921, SHAMBAUGH, in his summary, states:

1. Asthma is often associated with very definite pathological changes in the nasal cavity.

2. The pathological condition associated with most cases of asthma is the condition known as hyperplastic ethmoiditis.

3. This condition is not only associated with many cases of asthma, but its correction has often a very decided influence on the asthma.

4. The relation between the nasal condition and asthma appears to be not so much one of a nasal reflex neurosis as it is that of an anaphylactic reaction.

5. The improvement in the asthma resulting from operations on the ethmoid may be due to the elimination of foci harboring bacteria and their toxins.

6. Hyperplastic ethmoiditis frequently exists for a long period of years without any tangible evidence, such as the presence of nasal polypi in the nasal cavity. The diagnosis in such cases is made by forced inspection of the floor of the ethmoid in the middle meatus by anterior rhinoscopy or by means of the postnasal mirror.

7. Anatomical variations tending to interfere with the normal ventilation of the ethmoid, especially the high deflection of the nasal septum, may sometimes act as an etiological factor in the production of hyperplastic ethmoiditis.

8. A cure of the hyperplastic ethmoiditis, especially in the early stages, may sometimes be accomplished by overcoming the impaired ventilation of the ethmoid cells—that is, by correcting the deflected nasal septum and by removal of the middle turbinated body.

9. Some cases of asthma are permanently cured by an exenteration of the ethmoid. In other cases, the asthma returns when the polypi reform. In some cases the asthma appears to be but little influenced by the operation on the ethmoid. The explanation of the latter cases may be that the frontal and maxillary sinuses are also the seat of polypoid degenerations.

In discussing this paper Miller said the theory of asthma was now fairly definitely plain, and that what happened in an asthmatic attack was a bronchial spasm. One point that needed emphasis was the danger and unnecessary use of morphine in asthmatics. It was surprising how many were given morphine, and yet they experienced no greater relief than they would from the use of adrenalin. Since asthma was now being looked upon as an anaphylactic manifestation, our attention has been directed away from the nose and accessory sinuses in connection with asthma. The presence of foreign growths, like polypi, might lead to irritation which would give rise to a bronchial spasm in the same manner as bronchial asthma could be produced experimentally in animals. Furthermore, the existence of polypi favored the growth of bacteria. Recovery not infrequently followed the removal of polypi from the nose. This group of cases fell under the classification known as bacterial asthmas. Whether such polypi could act as foreign growths and affect the vagus was a matter which had been discussed.

Formerly, the diagnosis was considered complete when it was decided the patient had bronchial asthma, but now the diagnosis is not complete until we have determined what was the cause of the bronchial asthma. In other words, into what one of the four groups should the case fall? Was it a bronchial asthma due to animal emanations; was it bronchial asthma due to food or pollen, or was it an asthma due to bacterial infection? We were more and more inclined to believe that all asthmas could be placed in one or the other of these groups. A correct diagnosis was a great aid in instituting proper treatment. Formerly asthmatics were treated by the use of iodides and by climate. A number of asthmatics were relieved by climate, while others were not. It was generally recognized that it was impractical to desensitize a patient who had food asthma. While this could be done, the task was laborious, required much time, and frequently desensitization of the patient was of such short duration that it offered very little hope. In the group of food asthmas it was still necessary to handle them by withholding the particular article or articles of food from the diet.

In regard to pollen asthmas and their treatment, desensitization was fairly satisfactory, but on account of the short period of time the patient was desensitized he required desensitization every six months or a year, which made this method of treatment unsatisfactory in the end. He did not know what the experience of others had been, but his experience with the treatment of bacterial asthmas by the use of vaccines had not been satisfactory.

Blood Transfusion in the Treatment of Pulmonary Tuberculosis.

In the *Illinois Medical Journal* for January, 1921, FREILICH and three of his colleagues, in presenting a preliminary report, state that only advanced cases with unfavorable prognosis were utilized in their work.

The donors in each case were normal individuals with negative complement fixation tests for tuberculosis, negative Wassermanns, and negative tests for iso-agglutinins and iso-hemolysins.

In this series of six cases the patients have received from two to five transfusions at weekly intervals of 100 to 375 Cc. of blood.

Transfusion of over 200 Cc. of blood usually resulted in a reaction characterized by chill, fever, and sweat, with prompt recovery therefrom.

The clinical course in this series of cases was not appreciably altered.

Changes in the blood of the recipients in this series was a steady deviation to the left or no change, as determined by Arneth count.

In conclusion, it is evident that normal blood is devoid of that specific element which will arrest the progress of the disease. Further experimental work is now being carried on with a series of cases in which the donors show a positive complement fixation test for tuberculosis.

Massage of the Heart and Resuscitation.

In the *British Medical Journal* of January 1, 1921, GUNN says that the expression "massage of the heart" had been used as if the manner of performing it were indifferent, but he found experimentally that attention to points of detail may make all the difference between success and failure in difficult cases of resuscitation of the arrested heart. The grounds for certain of these conclusions may therefore be of value.

One question of the first importance is, that rhythmic compression of the heart effects in the first place an artificial circulation; it produces movement of the blood in the vessels to an extent which depends upon the way in which it is done. In animal experiments such as he performed an indication of the mechanical efficiency of massage in effecting a circulation of the blood could be obtained (the blood-pressure being at zero) by the amplitude of the wave of blood propelled into the aorta by each compression of the heart. A record of this wave was obtained by a mercury manometer connected with a carotid artery. But a more direct proof of the fact that massage of the heart acts, to begin with, as a substitute for the spontaneously beating heart in causing a circulation of the blood was obtained in the following way: A solution of a blue-green dye was injected into the cavity of the right ventricle of an arrested heart. Cardiac massage was then performed, and after a few compressions the blue-green color appeared first in the lungs and then in the carotid artery. Massage had therefore propelled the blood from the right ventricle through the lungs and left side of the heart into the systemic circulation.

Fisher describes this action of massage as "an influence upon the circulation that I have not seen previously observed." It is all the more interesting that Gunn has described independent observations on the same phenomenon but judged by different effects—namely, flushing of the skin and rise of intraocular tension occurring as the result of massage prior to spontaneous beating of the heart.

This action of massage has an importance not merely academic. Gunn has started the heart beating an hour after it has been arrested by chloroform. He has perfused the exsected heart of a still-born child four hours after the child was born, and started the heart beating again. The difficulty is not so much in starting the heart, though this may, of course, be difficult, but in starting the heart sufficiently promptly that the other tissues have not meantime been rendered incapable of recovery by stoppage of the circulation. So far as is known, it is the cells of the central nervous system that are most susceptible to stoppage of the circulation, so that, from the practical point of view, the circulation must be started before the cells of the central nervous system are irretrievably damaged. The current opinion is that after complete stoppage of the circulation for about fifteen minutes the cortical cells cannot be revived. While his own experiments have also pointed to this conclusion, he is not convinced that it is true; and, for reasons that he does not enter into, he says he would not be surprised if some day it were shown that even the cortical cells can survive arrest of the circulation for a much longer period. What is known is that they are difficult to revive. It is not proved that they are dead.

Many other tissues can withstand absence of circulation for a long period. Thus he

has revived the movements of the isolated guinea-pig's uterus after seven days' keeping in cold storage, and the human Fallopian tube after thirty hours; the rabbit's intestine after five days; the human vermiform appendix after thirty-six hours; and the heart after twenty-four hours or longer. At higher temperatures they do not survive so long, but even at temperatures between ordinary room temperature and body temperature they survive for hours. In tissues such as these there need be no anxiety in regard to the possibility of restoring their functioning capacity after prolonged arrest of the circulation. The liver requires further investigation.

In the meantime the question of resuscitation may be taken to depend upon how long the cortical cells can survive arrest of the circulation. And it is in this connection that there arises the importance of the capacity of cardiac massage to act as an artificial circulation. For the difference between complete and incomplete stoppage of the circulation is enormous when gauged by the effects on the cells of the central nervous system. It has been found, for example, that when an attempt has been made to occlude the cerebral circulation by clamping the vessels to the brain, much more prolonged survival of these cells may occur if a mere trickle of blood through a small vessel be intentionally or accidentally left. Other phenomena point to the same conclusion. For example, in hibernating animals both circulation and respiration are reduced to a very low level for months, and yet the animals revive rapidly and completely when the circulation and temperature, etc., are restored.

The experiments by Martin and Gunn have been confirmed by Fisher, and it can be taken as proved that massage of an arrested heart, if properly performed, can act as a fairly effective mechanical means of conducting an actual circulation of the blood. This being so, it is more than probable that, for the purpose of deciding whether the cells of the central nervous system are capable of complete restoration or not, the time can be calculated not as from the start of spontaneous heart-beats but as from the time of beginning massage. This is a point of fundamental importance, and puts a different and more hopeful complexion upon the whole question of resuscitation.

The most effective rate of compression is much slower than the normal heart-rate, for two reasons: One is that a slow rate is necessary to allow complete filling of the ventricles, and the other that it is a subnormal rate of beat that one is attempting to elicit—namely, the rate at which the arrested heart will begin beating again. The advantage of intermitting massage had not previously been suggested. Possibly if attention were paid to this, attempts to revive the human heart would be more successful.

There is no known drug comparable with adrenalin in efficacy to start an arrested heart or to antagonize the action of chloroform. He has shown that adrenalin can start beats in a perfused mammalian heart —for example, when kept for twenty-four hours—when mere perfusion has failed. When the isolated mammalian heart is perfused with concentrations of chloroform or chloral which almost or even completely arrest the heart, the addition of adrenalin to the chloroform or chloral solution is able to restore the heart-beats to their normal vigor. This is an extraordinary effect. It is not an antagonism of the type, for example, of atropine versus pilocarpine. For chloroform and chloral depress the heart muscle, and in the experiments referred to adrenalin is able to antagonize a concentration of chloroform or chloral which practically or completely stops the heart while the latter solution is still passing through the heart, and its action therefore getting deeper. Gunn does not think that this power of adrenalin—which is equivalent to stimulation of the sympathetic nerve of the heart—to antagonize a muscular paralysis has been sufficiently realized.

When the circulation is arrested in the intact animal, the difficulty, of course, is to get the adrenalin at the heart, even intravenous injection being practically useless

when the heart has stopped. One method is to inject adrenalin into the pericardial sac before beginning massage, but this might be difficult to one who has had no experience of giving such an injection, and he has himself no experience of performing it in man.

Seeing, however, that massage causes an artificial circulation, adrenalin will reach the heart in time from a vein if massage be continued. This will occur sooner the nearer to the heart the vein is into which the adrenalin is injected. If it were injected into an external jugular vein it would very probably reach the arrested heart after a few effective compressions by massage.

One point in regard to adrenalin which may cause confusion is that a combination of adrenalin and chloroform is, as has been pointed out by Levy, more likely to produce fibrillation of the heart than chloroform alone. This, however, refers only to cardiac arrest from chloroform occurring in the initial stages of anesthesia. This danger does not occur, in his opinion, in cardiac arrest occurring at other times.

There is another point in regard to the action of adrenalin about which there seems to be a good deal of misconception, and that is as to the permanence of its effect. It is true that in the normal animal with a good blood-pressure the rise of blood-pressure produced by adrenalin is very transient, lasting only a few minutes. But this is not true in certain abnormal conditions of the circulation—for example, when the animal is being resuscitated after arrest of the heart. Here the blood-pressure may remain low after spontaneous beats of the heart have begun. This low blood-pressure is due partly to temporary paralysis of the vasomotor center and partly to feebleness of the heart's contractions. These two effects interact on one another. This vicious circle is broken by adrenalin. The temporary rise of blood-pressure provides a better blood supply to both heart and vasomotor center, and this may be sufficient to enable both to function properly, and in these circumstances the rise of blood-pressure produced by adrenalin may be permanent. He believes it may be so in other similar conditions of the circulation.

To sum up, Gunn would venture to lay down the following directions for resuscitation in cardiac arrest in man or animals, whether from chloroform anesthesia or from any other condition in which cardiac arrest is "accidental:"

If the heart has stopped, artificial respiration should be resorted to immediately by the usual methods. If, at the end of three or four minutes, no pulse can be felt, and especially if no heart-beats can be heard on auscultation, adrenalin should be injected into an external jugular vein, by an assistant if available; if no assistant be available, he believes the gain from adrenalin more than compensates for the loss of time, provided the materials are at hand, as they ought to be. In the meantime, or subsequently, as the case may be, the abdomen should be opened high up, one hand inserted in the opening, passed up over the left lobe of the liver, and the heart felt for above the diaphragm. The heart should then be massaged intermittently. He indorses all that Fisher says in regard to not relying upon artificial respiration alone and in regard to boldness of procedure if the heart has stopped. When the heart has stopped there can be no further risk. As soon as spontaneous beats of the heart, however feeble, are felt massage should be interrupted for several beats to allow the contractions to establish themselves; otherwise continuous massage may abolish them again. The heart should then be massaged again for a short time, when the beats will probably improve. When the heart has begun beating it is safer to use too little than too much massage. The hand should not be removed from the abdomen till the heart is beating well. When the heart continues to beat regularly and strongly an intravenous injection of atropine should be given. Artificial respiration must be kept up continuously, also after the heart begins beating. After five minutes it may be interrupted to see if natural respiration will begin, but not for long. No harm is done by keeping up artificial respiration, even if

it inhibits the natural respirations, whereas, on the other hand, it is not safe to interrupt artificial respiration very long, if natural respiration does not commence.

If it be found that positive artificial respiration can be used in man by, for example, a Brodie pump of larger size than that used in the physiological laboratory, the problem of resuscitation will be greatly facilitated.

Natural respiration may be expected to begin in five to ten minutes after the heart begins to beat again, but may be delayed for thirty minutes.

During the manipulations, and afterwards if these procedures be successful, care must be taken to maintain the body temperature.

The Diet as a Postoperative Factor in Gastrointestinal Disorders.

In the *Medical Record* of January 22, 1921, LEVY states that in the dietetic treatment of all these cases the measures employed for a varying period following the operation should be the same as during the medical treatment of the condition. Although it is advisable for the surgeon for his private cases to have a more thorough knowledge of the action of foods, especially their chemical and physiological action, it is much better for him to work in coöperation with a gastroenterologist proficient in dietetic treatment. This should especially be done in the case of ward patients in public institutions. Each patient becomes a case unto himself and should be treated accordingly. He should be watched as to symptoms, and the diet arranged in accordance with the symptoms. When he is discharged "as cured" by the surgeon, he should be turned over to the care of a specialist in dietetics for a varying period for further observation and treatment.

All foods possessing any stimulating or irritating action should be avoided. All tendencies toward hypermotility and hypersecretion, especially hyperacidity, should be combated. In other words, the stomach and duodenum, as any other part of the body where a pathological lesion exists requiring rest, should be given as much rest as possible. Rest of the part is the greatest asset toward the healing of the injury; and by rest is meant physiological rest as well as dynamic rest. Stimulating foods are to a certain extent irritating. These foods tend to stimulate or irritate by a mechanical or physiological action. The mechanically irritating foods are the coarse fruits and vegetables containing indigestible constituents. It has been found that these foods, even when given in a finely divided state, are irritating, hence they should be eliminated entirely from the solid food list. The physiological irritants are those that act directly on the mucosa producing physiological changes, such as an increased congestion, and with this increased congestion there follow hyperacidity and hypermotility.

Spicy foods with pepper or mustard and other condiments all tend to have this effect. Other physiological irritants are those that act on the secretory cells indirectly and produce an increase in the acid content. Coffee, tea, meat extracts, and certain meats themselves have this tendency. Foods of another class which act differently and cannot be classified as either stimulants or irritants are the fats or fatty foods. These prevent proper rest to the stomach by unduly prolonging the emptying time of the organ.

With a general knowledge of foods that should be prohibited it is a simple enough matter to make out a diet list of foods that are suitable and proper. For the convenience of those who have occasion to treat these cases postoperatively, Levy appends a list of foods arranged in the order of their consistency. These foods have been selected with the one idea uppermost in mind, namely, that none shall be stimulating or irritating to the stomach.

Fluids: Water, whey, strained gruels, lemonade, orangeade, orange juice, plain or malted milk, chicken broth, creamed soups without vegetable masses.

Soft Diet: All foods in the liquid diet, eggs boiled at least three minutes, bread, potatoes (baked, boiled, or mashed), peas,

milk toast, boiled cereals, except oatmeal, such as rice, farina, cream of wheat, hominy, wheatina; puddings, such as bread, rice, tapioca, corn-starch, sago, containing no raisins; custard, ice cream, gelatin preparations, strained jellies, broths containing noodles or rice.

Semisolid: Foods in the above list, and chicken, broiled fish, except salmon and mackerel, cream or pot cheese, macaroni.

It has been his practice in those of his cases operated upon privately to coöperate with the surgeon in the after-care. As a result of this coöperation there have been very few recurrences of symptoms in these cases, and this success has prompted the writing of this paper. He has been convinced from this that by properly following out the above suggestions and recommendations, there is every reason to believe that there will be a reduction in the number of failures following operation in the class of cases mentioned in this paper. As a result of this, greater confidence will be placed in surgical interference for the cure of duodenal and gastric ulcer and for the relief of gastric symptoms in extragastric disease.

Pituitary Polyuria or Diabetes Insipidus.

In *Northwest Medicine* for January, 1921, WINSLOW states that the treatment of diabetes insipidus has hitherto been a failure, except when due to syphilis. Ergot, opium, bromides, valerian, and iodides are hackneyed remedies. Now we have a specific which produces truly dramatic therapeutic results. Medicine has no parallel to it except morphine in relieving pain. But the relief is temporary, and, so far as he has discovered in literature, no recorded case of permanent cure by it has been substantiated. This, *a priori*, might be expected since the underlying cause is not removed by the remedy—the subcutaneous injection of extract of the posterior pituitary lobe.

Pituitrin, surgical, represents both the pars intermedia and the posterior lobe, and is said to be twice as strong as the obstetric pituitrin. In diabetes insipidus thirst and polyuria disappear miraculously within about half an hour after injection of pituitrin. The urine becomes more concentrated within one-half to two hours. Pallor, a fall in blood-pressure, dilatation of the pupils, and sometimes headache, may also occur, and an immediate desire to defecate. Half a cubic centimeter twice daily is usually more successful in its relief than 1 Cc. once a day. The unfortunate fact exists, however, that pituitrin has usually no therapeutic action given by the mouth. Winslow finds only two writers claiming success from its use—Mazfelt, who says he has obtained good results by feeding fresh beef pituitary gland; and Engelbach, who found one case of polyuria remained well on continued pituitary substance gr. 10-30 t.i.d. by the mouth.

He reports two cases of diabetes insipidus in which treatment with pituitrin gave the most immediate and theatrically favorable results.

Management of Difficult Cases of Infant Feeding and Bronchopneumonia.

In the *Lancet* of January 8, 1921, VINCENT, in considering intestinal disorders in infancy, states that the cases which he discusses are full of difficulty and anxiety. The baby is suffering from diarrhea, is cold, very ill, and a fatal issue is probable unless a stop is put to the threatening conditions. He advises not to concentrate attention too much on the diarrhea. Long ago Holt, in his admirable book "Diseases of Infancy and Childhood," referred to the cases in which constipation occurs, remarking that in acute intestinal intoxication diarrhea is a conservative process of the greatest possible value, and Vincent cordially agrees with him. In 1887, Ballard, reporting upon his investigations into the disease known as "epidemic diarrhea," stated that in his opinion the disease could run its course from first to last, and even to death, without any diarrhea at all. In Vincent's paper on the "Bacteriological

Diagnosis and Treatment of Alimentary Disease in Infancy and Childhood" we will find a fairly complete account of the subject; he now gives only a very brief summary.

The first thing is to give the infant a good dose of castor oil. Stop all food and give warm sweetened weak tea—one of the best sustaining tonics for the infant and, generally speaking, much better than brandy. If the collapse is urgent, administer by inhalation 1 minim of amyl nitrite —the most potent restorative in all cases of infantile collapse and extremely effective in cases of convulsions. He has long abandoned the subcutaneous and intravenous injection of normal saline solution. If the baby cannot swallow, administer amyl nitrite and then give the normal saline by the mouth in a bottle. He has never known a baby to refuse it, and administered in this way it is extremely effective and gets into the baby much more quickly than by any other method. All fluids administered at this period should be at "super temperature," 110°. A direct microscopical examination of the intestinal dejection is of great importance, for, as a rule, this enables us to put the case into one of two groups: (1) Gram-positive organisms dominant—probably a case of lienteric diarrhea; or (2) Gram-negative organisms dominant—a case of intestinal toxemia.

The cases in which the Gram-negative organisms predominate are serious and, roughly, fall into two types of intestinal toxemia: (1) acute, (2) chronic. The acute type is very serious.

The importance of the bacteriological diagnosis in these cases can scarcely be exaggerated, for as long as the Gram-negative organisms are dominant the infant is in danger. He never feels justified in giving a favorable prognosis until he has satisfied himself that this toxic dominance has been obliterated. If the case is a toxic one, fresh milk is essential. Any form of cooked milk or food other than milk handicaps the growth of the lactic organisms and encourages the growth of the toxic organisms. In bad cases of toxemia fresh milk will not be anything like powerful enough, and cultures of the bacillus lacticus should be administered with every feed.

In the case of lienteric diarrhea the treatment is very different. The Gram-positive organisms are dominant. The dejections are acid—very likely much too acid. In such cases a small dose of opium is a very valuable remedy, as it soothes the irritated intestines. The infant should be kept very warm and should not be given fresh milk until the diarrhea has ceased. In these cases he finds that a good brand of unsweetened condensed milk much diluted is, as a rule, a very good food to begin with. In the course of its preparation it would appear that saccharated lime is added to the milk; this combination appears to be very well suited to the needs of the infant suffering from lienteric diarrhea.

In all cases of serious intestinal disorder the treatment must be conducted with great care. Sometimes the kind of food previously given is so ill-suited to the infant's needs that it must be stopped forthwith. But in other cases the changing of one kind of food to another and very different kind of food is too violent a procedure. For example, he is never satisfied until the infant is getting fresh milk in suitable quality and quantity, but this does not mean that he promptly orders a milk mixture suitable for a normal infant. The worse fed a baby has been the less likely it is to digest milk. The milk mixture must be given much diluted, and at first it should not be given at every feed. The proper food must be gradually introduced, for a delicate infant cannot straightway digest fresh milk after it has been deprived of milk for a considerable period.

Before closing his lecture Vincent referred briefly to a bronchopneumonia and the importance of correct feeding in these cases. The baby has been very ill with all the signs and symptoms of pneumonia, but the temperature has fallen; the breathing is much easier, and altogether it is clear that the severity of the attack has passed. Just at the time, however, that the rapid recovery of the infant is expected it be-

comes clear that something is wrong, and it is very often at this stage of the case that he is called into consultation. These are cases of colon toxemia; the infant has been swallowing large quantities of mucus, and the decomposition of this mucus in the intestine is responsible for the condition. The leading symptoms are apathy, great drowsiness, weakness, and refusal of food. Always feed infants suffering from bronchopneumonia on fresh milk and keep the bowels open, so that the mucus is speedily voided.

A Case of Cardiac Massage.

In the "Memoranda" columns of the *British Medical Journal* of January 8, 1921, COLEMAN states that he thinks it may be interesting to publish notes on the following case; though the treatment was not finally successful, yet the response was so marked as to emphasize the importance of the method:

The patient was a weak, thin man of forty-five to fifty. On August 21, 1920, the operation of gastroenterostomy was being performed for continual pain and vomiting. It was largely completed when the patient stopped breathing. Artificial respiration was performed and breathing very soon started again, but the pulse was very weak. The operation was continued, but in a few minutes breathing stopped again, and the pulse could not be felt. Artificial respiration, strychnine, ether under the skin, hot cloths to the epigastrium were all tried without avail. The gloved hand was inserted in the abdomen through the operation incision and an attempt made to massage the heart through the diaphragm, but the heart could not be felt at all. Finally, after half an hour, during which time there had been no voluntary breathing and no pulse or audible heart sounds, the case appeared quite hopeless. Then direct massage of the heart was tried. Coleman cut through the anterior left fibers of the diaphragm and passed his gloved hand, by means of the abdominal incision, through into the chest cavity. He found the heart small, flabby, and empty, and quite without movement. He grasped and squeezed it, and kept up continued massage on it, artificial respiration being continued meanwhile. After some considerable time, at least five minutes, the heart began to respond, inasmuch as it became firmer and larger, and on squeezing it empty it automatically filled again. Massage was continued. Shortly after, on ceasing the massage for a brief period, a very small beat, feeling almost like a tremor, continued, but only for a very short time. Pituitrin extract, 1 Cc., was given, and soon after, on ceasing the artificial respiration, the patient took one respiration himself, but did not continue. Again later the heart continued to go for a brief time alone and the patient breathed again. Then he breathed twice in succession, later three times, and so on till he twice breathed automatically nine times consecutively, but did not continue. Also the heart would not keep going for long if the massages were suspended. About a pint and a half of normal saline was injected into a vein in the arm and more pituitrin extract given, but the breathing would not start again. The heart gradually got weaker. It still responded to massage, but would only give one or two beats when left alone, till finally, nearly two hours after breathing first stopped, response failed and the case was given up.

Coleman notes that the heart had given no sign of beating for about half an hour when direct massage was tried. It could not be grasped or moved at all through the diaphragm because it was small, empty, and flabby, and lying against the back of the chest wall. Massage was continued for over an hour, and up to nearly an hour after commencing direct massage there was irregular and non-continuous automatic heart-beating and unaided respiration. This case might have been hopeful had direct massage been employed earlier. It would appear wise in every case of collapse under anesthesia to employ cardiac massage as soon as it is ascertained that the heart has ceased to beat.

Eclampsia and its Conservative Treatment.

In the *Virginia Medical Monthly* for January, 1921, BEAR states that the curative treatment varies with different men, some using medical measures along conservative lines, while others resort to radical operative procedures. The treatment may be divided into four great plans: sedative treatment; measures to reduce blood-pressure; eliminative treatment; and the operative treatment. Results are much better in a hospital than in a home. Veit was the first to advocate the use of morphia in eclampsia. The patient should be isolated in a quiet, semidark room and then treatment instituted. McPherson, of the New York Lying-in Hospital, who formerly was a believer in the surgical treatment, is now a firm supporter of the conservative treatment. The following is his method: blood-pressure is taken and a catheterized specimen of urine is secured. Hypodermic injection of one-half grain morphine is given, the stomach is washed out, two ounces of castor oil is poured down the tube at the end of the lavage, and the patient is given a colonic irrigation of five gallons of 5-per-cent glucose solution.

Venesection is done if the systolic blood-pressure is over 175. He uses one-fourth grain morphine every hour until the respirations drop to eight per minute. He further claims that at this time the convulsions have usually ceased, the patient will have fallen into labor, and will be delivered normally or by an easy low forceps in a short time. In his report two years ago, fifty-five patients were treated by this method with a mortality of only 9 per cent.

No one can secure the best possible results by becoming fanatically attached to a single plan of treatment; no two patients are exactly alike, and frequently certain modifications or added steps must be made to suit the individual case. With reference to venesection, it is best not to bleed them too much, for there may be a considerable loss of blood at the time of delivery and shock may ensue. On the other hand, if no venesection was performed, it is advisable to allow the patient to bleed just a little, rather than to check, since bleeding is one of the helpful means of cure. In giving morphine, he uses one-fourth grain every hour until the respirations range between 12 and 15. Other measures which are of extreme importance are catharsis and diaphoresis to produce elimination. Better results follow when the patient is placed under a portable sweat cabinet and subjected to a steam bath, than from the older plan of using the blankets. Croton oil, two minims in a teaspoonful of olive oil and allowed to trickle down the throat, will likewise prove beneficial. In the colonic irrigation, he uses either glucose or sodium bicarbonate, repeating same every four or five hours. Ether or chloroform, if used at all to assist in controlling convulsions, should be given sparingly.

The operative treatment, in case the patient is not delivered, is a question which varies considerably. Statistics show that with eclamptics treated by radical methods, the maternal mortality approaches an average of from 25 to 30 per cent, the fetal mortality 40 to 50 per cent. Several years ago surgical intervention was by far the method of choice. Like everything else the style changes, and at present there is a great tendency toward conservatism. Pains usually begin if the convulsions are at all severe, and labor is often rapid when once begun. Theoretically, there is much to advise the operative delivery of a woman in eclampsia. It is a known fact that the convulsions are due to her condition; it is a common thing to note that after the delivery the convulsions usually clear up.

It would seem, then, that the immediate delivery ought to cut short these seizures, but as a matter of fact it does not always do so; or, if there are no convulsions, the mortality may still be high. Convulsions may reoccur as late as the eighth day. There are many who advise Cæsarian section, vaginal hysterotomy, or accouchement forcé. He does not believe in Cæsarian section, except where eclampsia is complicated by a contracted pelvis or tumor formation. It must be borne in mind that

women in this condition to not stand surgical operations well; we are dealing with a severe toxic and degenerative affair, and with the addition of a general anesthetic they easily succumb to shock. In the preëclampsic type it is well to administer one ounce of castor oil with ten grains of quinine and repeat five grains in three hours. The introduction of a bougie will usually assist in the production of labor.

Bear does contend, however, that if a patient is already in labor with a fair dilatation, it is best to insert a bag or perform manual dilatation and thus hasten delivery; or if with a full dilatation, a mid or low forceps may be employed, the amount of anesthetic, if used, being very small. During the convulsive attacks the patient must be protected against injury by the use of the restraining sheet. A clothes-pin well wrapped placed in the mouth will prevent injury to the tongue.

Adrenalin in Resuscitation from Apparent Death.

In the *British Medical Journal* of January 8, 1921, WALKER states that anesthesia, asphyxia, the passage of a powerful electric current, violent emotion, and violent sensory stimulation may place the body in a state which resembles that of a clock which has been stopped, but not permanently damaged; if the machinery can be restarted it will continue to run automatically. Relatively simple means will often suffice to set things in motion again, as a mere shake will serve to start a clock. Sometimes it appears as though a more accurately fitting stimulus were required, like a swing in time with that of the pendulum.

Welby Fisher, in a very interesting paper, advocated cardiac massage applied through an epigastric incision. He makes no reference to the use of adrenalin. The following notes of a limited experience may be of interest.

Adrenalin applied to the heart muscle acts on the sympathetic neuromuscular junction, and very greatly increases both the excitability of the tissue and the energy output of the muscular contractions. In some twenty cases of death from various causes, when all signs of life had ceased for several minutes, Walker has injected a minim or two of 1-in-1000 adrenalin chloride directly into the heart muscle. A fine needle was passed through the fifth left intercostal space, just mesial to the lung resonance; the point was directed slightly inward and upward, and could be felt to enter the apex of the heart; when firmly embedded in the muscle the injection was made. Several of these needle tracks were examined post mortem, and in no case did it appear that any drawback would have ensued had the patient survived.

In most of the cases death had occurred as the result of long established disease, and adrenalin was neither expected nor observed to have any effect (a fact not without interest). The following cases are of interest:

A child of eleven months during a circumcision under chloroform had stopped breathing, and became pale and flaccid; the pupils were dilated, no pulse could be felt, and no heart sounds could be heard. Artificial respiration was started, and the heart was massaged by pressing the fingers under the costal margin; in this case the heart could be felt, and almost gripped between the fingers. There was no response, and the body was cooling perceptibly. Adrenalin was injected into the heart muscle, and immediately the heart started beating; shortly after respiration recommenced, and in a few minutes the child appeared normal. The time was not accurately observed, but it is estimated that at least four minutes had elapsed between the stoppage of the pulse and the injection of adrenalin. The anesthetist's estimate is considerably greater. The child was seen at intervals for three or four weeks; not the slightest ill consequence was detected.

A woman of thirty with empyema had just had an exploring needle passed into an intercostal space. Suddenly she became limp and pale, she murmured a word or two, but the sound diminished into silence. She dropped back apparently dead. The

muscles were quite flaccid and motionless, no pulse could be felt nor heart movement heard; jaw and eyes were in the cadaveric position. Artificial respiration was commenced, and adrenalin was sent for. Suddenly the pulse returned, beating strongly under the fingers, the patient flushed, and a few minutes later she was sitting up and talking. She had passed through a Stokes-Adams attack, subsequently repeated. Possibly more detached observation would have detected an auricular pulsation in the jugular veins. Had the adrenalin arrived half a minute sooner a striking success might erroneously have been ascribed to it.

Although this last case shows the need for caution in interpreting results, the other case suggests that injection of adrenalin into the heart muscle may restart it when other means fail.

Conceivably the needle might be pushed on into the cavity of the left ventricle and Ringer's solution containing adrenalin might be run in under pressure through a tube and funnel; on passing through the coronary arteries the adrenalin would be brought much more intimately into contact with the heart muscle, and would reach the excitable sinus node and auriculoventricular bundle. The flow of Ringer's solution, preferably oxygenated, would also supply a temporary artificial circulation. Reports on wounds of the heart suggest that the risks of passing a fine needle through the apex of the heart are small compared with those of the desperate condition in which such means would be used. The method seems sufficiently promising to invite preliminary experiments on animals.

Treatment of Certain Types of Goitre.

In the *Virginia Medical Monthly* for January, 1921, McGuire states that rest is the first and most essential factor in the medical treatment of this disease. It should be absolute and complete and must be mental as well as physical. It is useless to try to secure it at home. The patient should be placed in a hospital where he can be under proper control. Means and Aub studied the effect of rest on a group of cases. These patients had an average metabolic rate of +81 per cent, and after from one to three weeks the same group had an average rate of +67 per cent. In a few of the more toxic cases the curve rose in spite of rest. There was no case in the series whose metabolism was brought to within normal limits by rest alone. After a time a level was usually reached and rest alone did not cause a further drop.

The administration of various drugs with a view to lessen metabolism has been advocated. Of these, hydrobromate of quinine with ergotine, glycocholate of soda and pancreatic extract have the greatest number of advocates. Means and Aub have tested the action of hydrobromate of quinine on a group of patients and found that it had no apparent effect on the metabolic rate of the cases. While it is only of historic interest it may be mentioned that the effect of Beebe's serum on metabolism was also tested and found negative. The administration of digitalis is recommended by Willius, not for its effect on metabolism, but because of its influence on the heart. It is important to have a potent preparation and to prescribe it in sufficiently large doses to obtain the desired result. If it causes nausea by mouth it may be administered by rectum.

Use of the *x*-ray has long been advocated in these cases, and more recently the application of radium has been recommended, the theory being that a sclerosis is produced which lessens glandular activity. The relative merits of *x*-ray and radium have not yet been determined, but it seems that the choice is largely a question of the experience of the operator and the convenience of the patient. Means and Aub tested the effect of the *x*-ray on a group of cases. These patients had an average metabolic rate of +63 per cent. After one or two treatments at intervals of one month, there was a reduction to +52 per cent. After four or five treatments there was a reduction to +40 per cent, and after two or three years' treatment there was a reduction to +13 per

cent and the patients were able to lead normal lives. The advantages claimed for the *x*-ray method of treatment are that it avoids an operation and is attended by less danger to life. The disadvantages are the increased length of invalidism, the greater difficulty of operating if surgery is ultimately necessary, the possibility of shrinkage of tissues of the neck, danger of myxedema and of *x*-ray burns, and the liability of treating colloid and cystic goitres which are not benefited.

The injection of boiling water or a solution of quinine and urea into the body of the thyroid has been advised in cases of beginning hyperthyroidism not severe enough to justify operation, and as a preparatory measure to partial thyroidectomy in patients too ill to warrant any form of immediate operative procedure. The theory on which this practice is based is that the destruction of glandular cells and the obstruction of blood-vessels will cut down the output of thyroid secretion. The method has many enthusiastic advocates, who report good results. It is not without immediate or remote disadvantages and dangers. Some patients are so sick that even this apparently simple procedure will cause an acute and perhaps a fatal hyperthyroidism, others will not be benefited and a subsequent surgical operation will be made difficult by the adhesions it has caused, and finally the irritation may eventually result in the development of cancer. Balfour reports 103 cases of malignant disease of the thyroid, and it is a significant fact that seven gave a history of having been treated by the injection method.

It is generally conceded that at present the safest, surest and most satisfactory treatment of hyperthyroidism is by surgery. The practice of destroying a portion of a gland in order to lessen its physiological activity is certainly illogical, and only defensible on the ground that we are confronted with a condition and not a theory. Still it is a fact that while patients are benefited by rest and drugs and sometimes either make spontaneous recoveries or are cured by repeated and long-continued *x*-ray or radium treatment, she is given the best chance by an operation, and one should be advised as soon as the diagnosis of the disease can be established by the clinical symptoms, the metabolic rate and the Goetsch test, in order to economize time and avoid the possibility of serious complications.

The operations done for hyperthyroidism are ligations and partial thyroidectomies. The benefits from ligations are marked, but the results are not permanent. Observation in a series of cases at the Mayo clinic showed that ligations reduced the metabolic rate from an average of +57 per cent before operation to an average of +39 per cent three months after operation, and there was also a corresponding improvement in clinical symptoms and an average gain of 21 pounds in weight. Experience has proved, however, that sooner or later there will almost invariably be a relapse and the patient's condition become worse than before. Ligations, therefore, are not relied on to effect a cure, but are employed either as a test of a patient's reaction to trauma in cases in which there is no doubt of the individual's ability to stand a thyroidectomy, or as a means to get a patient in condition for a more radical operation when it is obvious that at the time a thyroidectomy could not be done without great hazard.

The results of partial thyroidectomies are prompt and permanent. If the operation does not effect a satisfactory cure, it is because either not enough of the gland has been removed or the operation has been delayed until the patient's symptoms are no longer due to hyperthyroidism alone but to organic changes in the vital organs as well. Means and Aub found in a group of cases that the average metabolic rate was 46 per cent before thyroidectomy, and during the first two weeks after the operation there was a fall to +21 per cent. Then came a secondary rise which continued until the fourth month, but in the third year the average rate was +13 per cent and the patients were leading normal lives. To get the best

results it is necessary to remove all of one lobe, the isthmus, and a large portion of the other lobe. Acute postoperative hyperthyroidism, which is the greatest danger of the operation, is not due as much to the amount of the gland taken out as it is to the amount of the gland left in. When it develops to a dangerous degree, the treatment advised by Crile of packing the patient in ice will be found most efficacious.

Medical Drainage of the Biliary Tract.

The *British Medical Journal* of January 8, 1921, in an editorial on this subject, states that by a happy combination of ideas derived from S. J. Meltzer's physiological observations on the one hand, with the use of Einhorn's duodenal tube on the other hand, Lyon of Philadelphia has during the last three years worked out a method of draining the bile ducts and gall-bladder which has already given excellent results in the diagnosis, prevention, and treatment of biliary disease, and gives promise of far-reaching importance. In 1917 Meltzer formulated his conception of contrary innervation as applied to the filling and emptying of the gall-bladder; Oddi's sphincter at the lower end of the common bile duct and the musculature of the gall-bladder are supplied with inhibitory and motor fibers from the splanchnic and vagus nerves, which act antagonistically to each other, so that when the sphincter is relaxed the gall-bladder contracts, and *vice versa*. He also showed that the application of a solution of magnesium sulphate to the mucous membrane of the duodenum was followed by relaxation of Oddi's sphincter, a result which was not produced when the salt was taken by the mouth. His hint that this observation should be utilized in human disease has been acted on by Lyon, who has published a series of papers containing observations and suggestions of great importance for future developments in medical and, indeed, in surgical practice.

Lyon believes that the application of magnesium sulphate to the duodenal mucosa induces contraction of the gall-bladder, and that incision of the gall-bladder or disease of its walls removes the normal antagonistic action of the gall-bladder and Oddi's sphincter, so that bile then runs continuously into the duodenum. The technique of the introduction of the duodenal tube is too long to quote; but it may be mentioned that the patient is examined twelve hours after a meal, contamination of the duodenal contents from the mouth and stomach being obviated by frequent washings; when the tube has entered the duodenum 75 Cc. of a 33-per-cent solution of magnesium sulphate is introduced, and the contents are then gently aspirated. In health the first bile thus obtained is of a light yellow-golden color, and comes from the common bile duct; after a short time the bile suddenly changes to a darker golden yellow, and becomes more viscid and larger in quantity; this bile is regarded as coming from the gall-bladder; later bile of a lemon color, thinner and more limpid than the other two, follows and is believed to be that freshly secreted by the liver. The normal gall-bladder contains 1½ to 2½ ounces of bile, but in stasis or atony of the gall-bladder as much as six ounces may be obtained, provided, of course, that the cystic duct is patent.

The characters of the bile change as the result of biliary infections, and comparison of the three samples, which can be separated into different bottles, will indicate what part—the gall-bladder or common bile duct—is infected or mainly involved. Chemical, microscopical, and bacteriological examination of the bile can thus provide an early diagnosis; and as Brown points out in a recent article on "The Meltzer-Lyon Method in the Diagnosis of Infections of the Biliary tract," early cholecystitis can be detected at a stage when the clinical manifestations — indigestion and minor colic—are vague, and the gall-bladder does not show any thickening or color changes to the naked eye, so that bacteriological examination of the aspirated bile provides the surgeon with data he might fail to obtain from an exploratory laparotomy.

When more than two and a half ounces of gall-bladder bile is obtained by aspiration, the diagnosis of stasis is justified, and by means of repeated aspirations this condition, which is of such importance in favoring infection and cholelithiasis, can be obviated. In cholelithiasis the bile may convey a gritty feeling to the finger, and microscopically show clustered masses of precipitated bile salts or pigment; on one occasion small concretions were aspirated through the tube, and several times calculi too large to be recovered by the tube were passed by the bowel after aspiration. Treatment of simple catarrhal jaundice by repeated aspiration of bile and subsequent disinfection with permanganate or silver nitrate solution diminished the duration of the disease by one-half, and probably minimized the risk of sequels. This method is not only of use in the treatment of early inflammations of the gall-bladder and bile ducts, but may be valuable in infections persisting or recurring after operation. Further, there is wide scope for investigation on the lines opened up by this method, on the action of cholagogues, on the early stages of biliary stasis, on the so-called functional disorders of the liver, and on the changes in the pancreatic juice.

Recovery from Fifteen Grains of Cocaine by the Mouth.

The *Illinois Medical Journal* for January, 1921, in commenting on this subject, states that Bonjour of Lausanne reported in the *Revue médicale de la Suisse romande* for June, 1920, xli, 6, the case of a homosexual man aged twenty-five, who out of spite against some person not named swallowed the contents of a gramme bottle of cocaine. As he was employed in a laboratory there was no trouble in getting the drug. The dose was swallowed at 11 P.M. During the night there was total insomnia and mild agitation with diminution of general sensibility, both superficial and deep. The lower extremities had a dead feeling. At 8 A.M. he was weak and ill and summoned the author. Two hours later he dressed and went to his office. The symptoms were remarkably mild, the pulse being apparently normal. There was no elevation of blood-pressure from vasoconstriction; there was no "cocaine jag" and no increased reflex activity such as is common among snuffers. There had been no convulsive stage with subsequent motor paralysis. The sole symptoms were agitation and hypesthesia. There was no irregularity of the pulse, no ultimate lowering of tension; in fact, the symptoms agreed with those which follow the ingestion of small doses.

The Modern Treatment of Acne.

In the *New York Medical Journal* of January 22, 1921, HIGHMAN states that the underlying causes of the disease are probably associated with the profound changes inherent in puberty. Inasmuch as puberty cannot be hurried or modified by treatment, the main hope of therapy lies in an attempt to alter the skin so that the predisposing factors become unable to do any great damage. It is necessary, before continuing, to state that the formation of pustules is incidental, the comedones acting as foreign bodies which make it possible for the bacteria in the follicles to become active. Thus the indications for treatment are twofold: First, the prevention of comedone formation; second, the control of the underlying factors, where this is possible. Incidental indications are the treatment of the scalp and the expression of the pustules and comedones.

The general treatment consists of regulating the diet by cutting down the starch and sugar intake and by promoting intestinal function. The latter is best accomplished by eating green vegetables and stewed fruits, together with the judicious use of cathartics, if indicated. If there should be disturbance of the internal generative organs, a condition rarely found in the young, this should be controlled. In dieting patients, however, it is extremely important to keep up the general nutrition and weight.

The most important indication in local treatment is to prevent comedone formation. If this can be accomplished, pustules will not develop and the disease will be automatically controlled, even though the predisposing causes are not, for acne cannot occur where the skin is normal and the sebaceous glands are not overactive. In former days this was done with moderate success by the use of sulphur, resorcin, or salicylic acid in lotions or creams. These substances make the skin peel and tend to overcome the condition favoring acne. Today this may be accomplished more certainly and more precisely by the use of the *x*-rays in given amounts. One Holzknecht unit applied to the face weekly, for from ten to sixteen exposures, will cure the average case of acne, and if from time to time there should be recurrences, these will yield readily to two or three exposures. The *x*-rays work by diminishing the function of the skin glands and by diminishing exfoliation. Conservatively stated, nine cases out of ten can be cured in this fashion.

Thus it is possible to start treatment when acne first appears and before any real damage has been done to the skin. No local treatment is necessary at home. This eliminates the expense and the loss of time that the purchase and application of drugs involves. In other words, about six minutes weekly in a physician's office for from ten to sixteen weeks will accomplish more than older methods could ever do.

The cosmetic result is enhanced by skilful expression of the comedones and pustules, and the incidence of recurrences is reduced by the use of mild antiseptic lotions to the scalp. The employment of vaccines, so far as his experience goes, promises nothing, for, as already stated, the pustules are purely incidental and will not develop unless comedones are present. It goes without saying that the general treatment should not be neglected, for, after all, the disease is a local manifestation of a general disturbance, and more permanent results are secured by bearing this fact in mind. Nevertheless, without the local disturbance, the general derangement is incapable of producing acne, so that the major indication is the treatment of the skin.

In addition to the foregoing, the patient should wash the face with a rich lather twice a day and shampoo once a week with some simple soap. Green soap is contraindicated. Recurrences take place in about one case in four, and are easy to control with two or three *x*-ray exposures. This line of treatment was unsuccessful in only three instances out of fifty, and in one of these patients there was a marked secondary anemia. Such exceptions are indeed rare, and as compared with other methods of treatment, the precise one outlined removes acne from the group of the serious disturbances of youth.

The Treatment of Pernicious Anemia by Splenectomy.

In the *Journal of the American Medical Association* of January 29, 1921, GRIFFIN and SZLAPKA, in their conclusions, state that their review concerns fifty patients with pernicious anemia for which splenectomy was performed. All were operated on more than three years ago. The operative mortality was 6 per cent. Ten patients (21.3 per cent) of those who recovered from operation survived splenectomy three years or longer. Five patients (10.6 per cent) of those who recovered from operation have survived splenectomy more than four and one-half years and are still living. The total length of history of these five patients averages almost six years. It may be stated with reasonable accuracy that, in addition to the immediate remission which occurred constantly following splenectomy, splenectomy prolonged life in at least 20 per cent of their cases.

The authors cannot satisfy themselves that any particular preoperative characteristics of the disease are indicative of favorable results following splenectomy. However, in the type of case in which there is evidence of active hemolysis, the patient shows a more marked immediate improvement. They believe that splenectomy may

be recommended in pernicious anemia when, in view of all the circumstances, personal as well as medical, the possibility of the prolongation of life appeals to the family and to the patient. Occasionally the operation may be performed in order to bring about an immediate remission.

Treatment of Pregnant Females Suffering from Malarial Fever.

In the *Indian Medical Gazette* for December, 1920, MOJUMDAR states that having been placed in a highly malarial station for over four years, and having had to treat more than 30,000 malarial patients, including some pregnant females, he submits to the profession the result of his experiences.

Pregnant females invariably get uterine contractions (especially if the pregnancy is advanced) when they have high fever, and as quinine has the disadvantage of inducing uterine contractions as well, the use of quinine has an obvious risk. But it must be borne in mind that quinine is the only remedy that will control malarial fever, and if high fever persists unchecked, that itself will bring about abortion and may lead to more serious consequences as well.

So the ideal treatment is not to withhold quinine, but to give it in a dose sufficient to kill parasites, but not sufficient to bring about violent uterine contractions.

The question arises, therefore, what is the minimum dose that will control fever? He thinks, if properly absorbed, 10 grains in twenty-four hours—repeated if necessary—is sufficient for benign cases, and for bad and pernicious cases the dose is proportionately higher—*e.g.*, for cerebral cases big doses of quinine are necessary, and in such cases the mother's life is so much in danger that the question of abortion does not arise at all, and so such conditions are left out of our present consideration.

In this connection he lays special stress on the necessity of insuring absorption of the quinine given, for, with a bad abdominal condition and sluggish liver, so little of it will be absorbed that it is preferable to inject it intramuscularly.

He then follows these procedures:

1. When the fever is chronic—*i.e.*, going on for some length of time, with a rise to 100° or so in the evening and no uterine contractions—he opens the bowels with some mild aperient, such as sodium sulphate or castor oil, and then gives quinine bihydrochloride, 3 grains, every six hours, until the temperature is fully controlled. If there is any tendency to uterine contractions, he prescribes a mixture to be given alternately with quinine—containing bromides, viburnum, and hyoscyamus.

When the temperature is controlled, he continues quinine in smaller doses with iron and arsenic for some length of time.

2. When the temperature is high, 104° or 105°, and there are probably uterine contractions with it, he considers the condition anxious. He reduces the temperature with hydrotherapy and prescribes uterine sedatives. If he decides on giving morphia, he injects ⅓ grain or so. In favorable cases, as the temperature comes down, the uterine contractions also quiet down. He injects deep into the gluteals 10 grains (and not less than 7½ grains unless there are special contraindications) of quinine bihydrobromide. He always insists on the thorough massage of the muscle to diffuse the fluid through as wide an area as possible, and that always prevents lumps and painful buttocks.

This injection generally postpones the second paroxysm sufficiently to make it possible to inject another 5 grains of quinine twelve hours after, and in fortunate cases two injections suffice to control the temperature, and then more quinine may be given by mouth. In less lucky cases the same procedure is repeated—quinine being injected during the period of remission until the temperature is controlled.

3. For more serious cases, he repeats again, the life of the mother is so much in danger that the safety of the fetus becomes a secondary consideration, and if quinine given in small doses does not control the fever, it must be pushed in larger doses until the physiological action is produced.

The Management of Breech Presentation.

In the *New York Medical Journal* of January 29, 1921, PFEIFFER reaches these conclusions:

1. Breech may be corrected oftener than commonly supposed and external version should be attempted, unless the etiology makes this impossible.

2. There is a definite mechanism for buttocks, shoulders, and head, with spontaneous delivery. Hence, until positive indications arise in either the mother or the child, interference is not only meddlesome, but dangerous, as it may make a difficult case of a simple one, seriously endangering the life of the child.

3. Of importance in the management of spontaneous delivery of breech are a fully dilated os and a well stretched floor. In breech extractions this importance is strongly accentuated.

4. A proper assistant in all cases is urged, as expression is better than traction.

5. Cæsarian section occasionally may be necessary, but this is because of associated anomalies rather than the breech presentation.

The Reduction of Blood-pressure in Eclampsia.

The *New York Medical Journal* of January 29, 1921, in an editorial on this subject, points out that high blood-pressure in eclampsia is a dangerous complication, and therefore it is of value to know the most effective and safest means for reducing it. At a meeting of the British Royal Society of Medicine held on December second last, Hingston read a paper on the subject in which he related his experience in the treatment of this condition at the Government Maternity Hospital, Madras. He stated that at this institution two thousand women were confined and about thirty cases of eclampsia were seen every year. He was of the opinion that the blood-pressure should be kept down to 120 mm. or less, not only in all cases of eclampsia, but in all cases of labor with premonitory symptoms of eclampsia. Moreover, he felt certain that the blood-pressure rose after delivery in a certain number of patients who had shown symptoms of eclampsia up to the time of or during delivery, and in other cases in which no signs or symptoms had manifested themselves before and during delivery. Consequently, he held the view that it was essential to watch all cases after delivery and to reduce blood-pressure to 120 mm., whenever it rose above that after delivery.

As to the best and safest method of achieving this object, Hingston believed that the most effective mode, if the os was less than four-fifths dilated, was to bleed the patient until the blood-pressure fell to 120 mm.; when the os was four-fifths dilated he recommended the reduction of the pressure by immediate delivery. If it rose after delivery venesection to reduce it should also be practiced, and this procedure might have to be repeated two or three times. At the Madras Government Maternity Hospital, the largest gynecological and maternity clinic in the British Empire outside the British Isles, this method of reducing blood-pressure had been practiced during a period of three years. The cases thus treated yielded more satisfactory results than those obtained formerly when other methods were in vogue. The mortality was very small indeed, less than two per cent.

According to Hingston more radical measures, such as accouchement forcé and Cæsarian section, are not called for. These measures assuredly reduce blood-pressure, but he yet upholds venesection. In the majority of cases this procedure stopped or lessened the frequency of the convulsions, lowered the blood-pressure to 120 or less if required, prevented rises in temperature and serious lung complications. A considerable proportion of the patients became less drowsy and in some instances passed rapidly from a deeply comatose to a semiconscious condition, and all were less irritable. It was likewise his practice to reduce the temperature if it rose above 100° F

All those who took part in the discussion disagreed with Hingston as to the good effects of venesection. Mr. Aleck Bourne gave it as the result of his experience that expectant treatment with starvation, elimination and veratrone often obviated the need for Cæsarian section. Donaldson pointed out that there was probably a protective mechanism in these cases to keep the blood-pressure high and thus help the kidneys to eliminate toxins, and he doubted the wisdom of attempting to lower blood-pressure. He believed in treatment by Cæsarian section. Luker agreed with Donaldson. The injection of saline after bleeding might sound paradoxical, but the latter washed out the poison and acted as a diuretic. The main object was to remove the poison, and the best way to achieve this was delivery by Cæsarian section, followed by saline.

Thus it would seem that British expert opinion is not in favor of venesection as a means of reducing blood-pressure in eclampsia. Of course, venesection is lowering, and repeated venesection reduces the amount of blood when it can be least spared. It is an important question, and the opinions of some of our obstetricians with respect to the most sane and safe way of reducing blood-pressure in eclampsia would be valuable.

Surgical and Genito-Urinary Therapeutics

Cholecystectomy with Modified Drainage.

MAYO (Charles) (*Minnesota Medicine*, January, 1921) notes that the opening of the gall-duct, which also delivers the pancreatic secretion, is usually located beneath an overhanging fold of mucous membrane in the duodenum and is thereby well protected. The little terminal opening is surrounded by the muscle ring of Oddi, which keeps it closed, and which should serve to equalize the tension of bile in the ducts and gall-bladder as opposed to the hepatic circulation producing it. The sphincter of Oddi is stronger in animals that have gall-bladders than in those without them, according to Mann. The gall-bladder in health has a capacity for temporary storage of several ounces of bile, and rhythmic contractions stimulated by the contents of the gall-bladder and ducts occur, causing such delivery as is common to the ducts, the ureters, and the small intestine. Their contraction readily overcomes this muscularly closed outlet, and the peculiar manner in which nature delivers a duct into a viscus by passing it partly through the wall, then continuing between the outer wall and the mucous membrane, so that internal pressure closes by compression from within but does not interfere with peristaltic delivery through the duct, is true of the common duct; under normal conditions it prevents back flow. This also is true of the little ducts delivering from the lobules of the pancreas into the main pancreatic ducts, not directly at right angles, but on a slant so that internal pressure tends to close them, undoubtedly a provision of nature to prevent the possible irritative effects of chemically changed bile in obstruction from entering the small pancreatic ducts.

Rosenow's investigations were based on the theory that the infection is carried through the blood stream, even in the tissues closely associated in function or connected by ducts—in other words, the specificity of localization of bacteria, which is now commonly accepted. It is probable that the chemical effects of bacteria and stasis of the gall-bladder cause the development of stones, the materials for which are taken from the blood stream, although it must be admitted that the same materials are also present in bile.

Specific destruction of tissues by toxic

agents has long been known; recent experiments of Mann are most illuminating in showing the chemical effects of non-toxic drugs acting through the blood stream, being wholly selective in their effects on the gall-bladder. Mann has shown that Carrel-Dakin solution injected intravenously into dogs in amounts from 5 to 10 Cc. to each kilogramme produces selective changes in the circulation of the gall-bladder and destruction of that viscus, varying according to the quantity of solution used.

The increased cholesterol content of blood during pregnancy undoubtedly contributes to the higher percentage of women affected by cholecystitis with stones; the ratio is about 77 per cent in females to 23 per cent in males. Approximately 90 per cent of the women have borne children and have had the first attack in close relation to a pregnancy. It is of interest to note that cholecystitis without stones occurs in women twice as often as in men.

A general knowledge of the pancreas and its diseases is very essential in the diagnosis of the diseases of the upper abdomen. In the majority of instances the condition of the pancreas, even in tumor formation, is overlooked unless the changes are gross, and mild derangements of function are often attributed to obstruction or disease of the liver. To be sure the condition of the pancreas is usually secondary to an infection involving the structure of the gall-bladder, and although the infection may be brought through the continuity of tissues involved, through the duct itself, or through the lymphatics surrounding it, experimental evidence indicates that the pancreas too is probably more commonly affected through the blood stream. Of the 1254 patients seen at the Clinic with gall-stones and cholecystitis during the last year 339 showed changes in the pancreas so marked as to be recognized clinically.

Cholecystostomy is now reserved for the special case in which advanced age or complications make it desirable; 3346 cholecystostomies have been performed at the Clinic from January, 1907, to August, 1920. Cholecystectomy with local peritoneal drainage has been the rule, but it is now used for gross infections, without biliary drainage, although biliary drainage is still provided for in most cases of common-duct disease, closure being made in suitable cases without biliary drainage but with peritoneal drainage.

In cholecystectomy a right oblique incision is made. The writer prefers to slant gradually through the vertical lines of muscle fibers, so that a firmer union of continuously divided muscle may be secured than by a split muscle incision; however, there are many incisions which will serve. Occasionally a gall-bladder is placed deep beneath the liver and under its costal margin. Then the liver may be forced toward the midline by packing a large gauze square over the top and to the right of the organ. This maneuver of Masson brings the gall-bladder directly into the exposed field and greatly facilitates the operation. Large distended and necessarily obstructive gall-bladders are at times emptied by a trocar, and in acute inflammations may then be split from top to bottom. The mucous membrane in such conditions readily peels from the connective tissue on the surface of the liver. Bleeding is usually very slight; if it is at all sharp the separation has gone unnecessarily deep beneath the connective tissue on to the liver; the bleeding may be controlled by a temporary hot pack. The anterior portion of the gall-bladder is completely cut away and the duct closed by suture. As a rule gall-bladders are removed intact without being opened. The cystic duct is isolated, clamped between two forceps, and divided, the cut ends of the duct exposed being touched with tincture of iodine and double ligated. The cystic artery is then caught and ligated. The distal end of the cystic duct is drawn up, and with blunt-pointed dissecting scissors the gall-bladder is separated from the liver from below upward. This procedure prevents, to a great extent, the possibility of injury of the common or hepatic duct. The greatest danger,

however, is accidental division and loss of the cystic artery during operation. Variations in the ducts and in the origin of the cystic artery lead to such accidents.

The papers of Brewer, Ruge, Gosset, and Eisendrath describing such variations are well worthy of perusal. The surface peritoneum of the gall-bladder which is left at its attachment to the liver furnishes an easily sutured field. An interlocking catgut suture closes the raw surface down to the ligated cystic duct. The needle with suture is now passed alternately into the right border of the gastrocolic omentum and the right border of the gastrohepatic omentum with an occasional catch into the fatty round ligament to include it in the suture. This fatty apron shuts the stomach, pylorus, and duodenum off from possible fixation to the liver through adhesive attachment. If drainage is indicated it is between the liver and the fat and not between the liver and the pylorus. More and more Mayo is closing the abdomen without drainage, in only a few instances satisfying his old inclination to drain by leaving the double strand of catgut attached to the liver, where the gall-bladder fundus was separated from it, and continued in a suture down to the cystic duct. This catgut is brought out of the abdomen, but the abdomen (peritoneum, muscle, fascia, and skin) is closed tightly around it. Should there be any indication within a few days of a retained secretion, forceps may be passed along the strand of catgut into the abdomen, as any drainage would have followed the catgut suture line to the abdominal wall. If by the fourth day the catgut is not required it is placed under slight tension and cut beneath the skin. This method of cholecystectomy with complete closure of the abdomen has reduced very largely the danger of hernia which was not infrequent in the old days of drainage, whether of bile or peritoneal exudate.

Failure to cure may be due to age or to associated disease. Therefore a careful general examination is required before operation; and with the abdomen open exploration should be made to determine the presence of other disease. The appendix may be the original focus. A diseased pancreas may be the cause of future colic even after the gall-bladder is removed; consequently the condition of the pancreas should always be stated in the operative records.

The percentage of cures following operations on the gall-bladder varies; some patients with colic from stone consider themselves cured if relieved of the colic. A definite cure occurs in approximately 60 per cent, great improvement in 30 per cent, and 10 per cent have less improvement because of the extent of the disease or complications.

The diseased gall-bladder should be treated by cholecystectomy as a rule, its drainage being required under special conditions. Abdominal biliary drainage is not indicated except in complications. Abdominal drainage is indicated only in conditions in which it would be used in the surgical treatment of other abdominal disease in which infection is present or has been present.

Mastoidectomy Under Local Anesthesia.

DUNLAP basing his conclusions on an experience in twenty-five acute mastoids operated on in the past three years under local anesthesia (*The Journal-Lancet,* Jan. 15, 1921) gives the history of a case in which the patient apparently enjoyed the procedure. "The Doctor slept during his operation and asked several times if he was still at work."

The only complication which he has encountered in twenty-five simple, local mastoids was one where a 10-per-cent cocaine solution was furnished instead of a 1/10 of 1 per cent solution; 12 Cc. of this, or 18 grains of cocaine hydrochloride, were injected before the error was noticed. Immediate incision to release the fluid injected and no attempt to stop bleeding prevented any untoward results.

The periosteum is a sensitive structure,

even under normal conditions. The bone receives a sensory nerve supply from the periosteum, and if the latter is completely separated or rendered insensitive, bone in this location and its entire cross-section become absolutely insensitive. Muscle, *per se,* is insensitive, but sensory nerve tracts pass through connective tissue septa of the muscle bundles. Infiltration anesthesia by contact of 1-per-cent novocaine and five drops of 1-to-1000 adrenalin solution per ounce induces satisfactory anesthesia. The injection is begun by endemic infiltration of wheals and the needle placed into the anesthetic edge of successive wheals. For each centimeter of incision about 1 Cc. of fluid is used.

Neuman injects beneath the upper wall of the external auditory canal, and the fluid passes under the drum membrane and the mucosa of the tympanic cavity. The author has found this unnecessary. The canal is anesthetized by drawing the ear forward and inserting the needle just behind the ear along the anterior surface of the mastoid process. For simple mastoidectomy, infiltration of the soft parts is sufficient. This excludes all operative, but not psychic, stimuli. The circular anesthesia of Hackenbrach, circumscribing the operative field with the anesthetic solution so that all nerve supply to this part will be interrupted, has not been found necessary, the infiltration anesthesia, due to contact with sensory elements, being sufficient to cause complete break in all conductions. Novocaine causes no irritation to the most delicate tissues, is of zero toxicity, its action is more profound, and the duration is increased by adrenalin, minims 5 per ounce.

Mastoidectomy may be classed as a serious operation. Every effort should be made to conserve the remaining resources of the already crippled patient and aid him to make an uncomplicated recovery. A large percentage of mastoid surgery may be accomplished under local anesthesia more safely and with greater comfort to the patient than with the use of general anesthesia. It is not a surgical stunt to be attempted only by "local anesthesia gymnasts," but a sane routine procedure requiring no special equipment and with simple but careful technique. The patient approaches operation with a normal amount of fluids in his system, and avoids the dreaded general anesthesia with its disagreeableness, depression, and bad after-effects.

Goldstein, in the army, resorted to local anesthesia because constant presence of atmospheric infection and the frequency of active pneumonia presented many risks in major operations under protracted general anesthesia. He discusses local anesthesia as a possible regular and routine procedure, using any 10-Cc. syringe, 1-per-cent novocaine in sterile distilled water with the addition of five drops of adrenalin per ounce. He colored his cocaine solution with methylene blue, to avoid mistakes of solution. The subcutaneous injection is made from the base of the zygoma down to the mastoid tip, injecting a region one inch from the insertion of the ear. Deep injections are made by plunging the slanting needle down to the mastoid bone, thus getting beneath the periosteum and the mastoid muscle. The usual sweeping incision is made from the zygomatic line to the mastoid tip and down to the bone, and the operation proceeded with in the usual way, being careful of the posterior canal wall, which is quite tender unless injected. If it is injected there may be some swelling for twenty-four hours. Thus a procedure has been worked out independently, by various workers, practically the same, with a minimum of pain and risk to the patient's health, no mortality, and no wound slough.

Operation for Renal Calculi.

HOWARD KELLY (*New York Medical Journal,* Jan. 1, 1921), after outlining the development of renal surgery as applied to the removal of stones, discusses this topic. He excludes from consideration massive and extensive branching calculi, where there is nothing to be done but excise the

kidney, when its function is wholly in abeyance, or at most to incise it from end to end in the effort to remove the calculus without extensive tearing of the tissues.

With due care the wax tip is both certain and satisfactory, and Kelly still uses it, while using the *x*-ray also.

After resorting extensively to pyelotomy, drawing especial attention to the necessity of preserving the fibrous sheath investing the pelvis of the kidney, described by Mayo (W. J.) and himself, he has finally worked out an operation which at first blush is an apparent return to the former crude plan of splitting open the kidney. This procedure is accompanied with a minimal and usually insignificant trauma, as yet with no serious hemorrhage; it is rapid in its execution, and usually avoids any urinary leakage, such as was not infrequent under older methods.

The best incision is through the posterior superior lumbar triangle. In many cases he pulls the tissues widely open with a blunt dissection, thus securing enough room to introduce four or five fingers, the whole hand. After breaking through Gerota's capsules, by simple traction with forceps on the perirenal fat it is often possible to draw the entire kidney out onto the surface. Whether it comes out in this way, or whether it has to be detached by gentle manipulations on all sides, separating it particularly in its upper pole in most cases, it is displaced onto the loin without the slightest damage, and dealt with there in the succeeding stage. Often, however, knowing exactly the position of the stone, he operates upon the kidney *in situ,* and makes a direct opening into its lower pole, or again simply frees and tilts down the upper pole, so as to bring it within reach for the extraction of the calculus. In either case, whether treated *in situ* or outside, the operator gently palpates the kidney between the thumb and fingers, including the renal pelvis, to see whether the stone can be felt and located. If it is found it can then be thrust up toward the dorsum with the fingers to facilitate the enucleation. If it is not so located, then with the *x*-ray plate before him as a guide the next step is to take a fine needle about 6 cm. in length, fastened in a cork, and to thrust this into the kidney, where it is expected the stone will be found. Once the needle touches the stone, it is left *in situ,* while a small incision (averaging about 2 cm. in length, but varying with the size of the stone) is made through the renal capsule. An instrument is then taken in hand which is neither blunt nor sharp, and which can be pressed against the finger without cutting it. This is driven through the renal substance down to the stone. A narrow pair of forceps is then inserted and the stone caught and extracted.

If the removal is clean and clear, and there is only a mild infection, Kelly closes the wound entirely with one or two mattress sutures; as the bleeding is usually minimal, a single catgut mattress suture may suffice. The external abdominal wound is then closed with a small drain. Sometimes it is an advantage, if the stone is a little large, to carry the scissors into the pelvis until the stone is touched, and on withdrawing to open them a little, thus enlarging the opening in a blunt way.

Surgical Treatment for Cerebral Hemorrhage in the New-born.

STRACHAUER (*Minnesota Medicine,* December, 1920) calls attention to the importance of cerebral hemorrhage and its neglected treatment. It is the cause of death in over 50 per cent of the infants, still-born or dying within the first week of life at the University Hospital. Its frequent occurrence without death is attested to by the thousands of cases of mental deficiency, spastic palsies, epilepsy, blindness, and varying degrees of amentia. The early recognition and the prompt institution of appropriate treatment will prevent many of these deaths and, much more important, avoid the sad sequels of cerebral hemorrhage.

The etiology of cerebral hemorrhage of

the new-born is complex. Incident to the trauma of parturition, the molding of the head, the overlapping of the parietal bones, or the occipitals under the parietals, the blood-vessels of the brain may be torn. Excessive trauma may even cause laceration of the large veins and sinuses, with prompt death. Spontaneous rupture of the delicate vessels may occur in the cerebral congestion of asphyxia neonatorum. Cerebral hemorrhage occurs as frequently in normal, precipitate, and even premature births as after stormy labors. Cerebral blood-clots have been found before birth. Hence there are causative factors to be considered other than those of trauma. The majority of cases are caused by a combination of the normal trauma incident to childbirth and a phase of the so-called hemorrhagic diseases of the new-born. Rodda in his work on the coagulation and bleeding times of blood in the new-born has shown that "there is a prolongation of coagulation and bleeding times from the first to a maximum on the fifth day of life, with a return to the average first-day determination time before the tenth day. It is significant that this coincides with the age incidence of hemorrhagic disease and cerebral hemorrhage." This normal prolongation of the coagulation and bleeding times makes it difficult for nature to control the hemorrhage incident to the traumatic rupture of the delicate cortical vessels. The blood-clot in the vessels is soft and easily disturbed. When the coagulation and bleeding times are abnormally and greatly prolonged, as in the condition of hemorrhagic disease of the new-born, the oozing or bleeding continues, causing increased intracranial pressure, convulsions, and death. If the infant survives, the after-results of the increased intracranial pressure and cerebral degeneration manifest themselves promptly, or slowly in the course of months.

The hemorrhage may be supratentorial, infratentorial, or intraventricular — the blood coming from the longitudinal sinus or its tributary system, the transverse sinus, or the vessels leading to it, or the choroid plexus respectively. It may come from a torn tentorium. The hemorrhage is most commonly cerebral and unilateral, the blood coming from the delicate cortical vessels. The blood may clot or remain fluid. Among eighteen autopsies upon cases of cerebral hemorrhage at the University Hospital by Dr. Warwick, there was no instance of gross hemorrhage into the brain substance.

The history of the births, while important, shows in the majority of the cases normal and non-instrumental deliveries. The birth may even be precipitate. Various degrees of asphyxia neonatorum and delayed spontaneous respiration are common. The respiration when established is frequently slow, shallow, and irregular. The pulse is slow in the moderate degree of compression, and rapid when medullary paralysis is imminent. Inequalities of the pupils and ocular palsies may be present. Hyperactivity of the reflexes, the child starting and twitching in response to mild or normal stimuli, with the development of spasticities, and focal or general convulsions, are characteristic. Examination of the fontanelle may disclose a distention, a tenseness at times of board-like degree, or actual bulging, with loss of pulsation. The sutures may be separated and the veins of the eyelids and forehead prominent and dilated. The infant may be languid, apathetic, and have difficulty in swallowing. Disinclination or inability to suckle is common. The delivery may be normal or stormy and a slow cerebral hemorrhage be present, not manifesting itself until after several days with the gradual development of cerebral compression. The symptoms may be mild, with perhaps a convulsion or two, and the child seemingly spontaneously recover. Later observation discloses the lack of mental development—the spasticities, deafness, and blindness; or epilepsy may develop from adhesions, scar, cysts, and so forth, depending upon the location and extent of the hemorrhage.

The coagulation time of the blood and bleeding time will be found prolonged in the majority of the cases. This information is most important, and with Rodda's simple method should become a routine

estimation in the new-born. When both times are greatly prolonged, hemorrhage can be anticipated and prophylactic injections of blood made or transfusion be performed. The hemorrhagic tendency should be controlled, and evidence of hemorrhage most assiduously watched for.

A spinal puncture is to be performed, and spinal manometer readings may be made. In the infratentorial hemorrhage, blood under various degrees of pressure may be obtained. In the supratentorial cases microscopic blood may be present in the spinal fluid, but the finding is not reliable. Zanthochromia should be tested for; when positive it points to hemorrhage, about the base of brain or upper cord region.

Prolonged coagulation and bleeding times call for the injection or transfusion of blood. Repetition is guided by the blood findings. In the slow bleeding cases this treatment may be preventive and suffice. The shortening of the coagulation and bleeding time in severe hemorrhages is absolutely essential to successful surgical intervention.

In the infratentorial cases spinal puncture or punctures may be performed. As much as 60-80 Cc. of blood may be removed at a time, the tenseness of the fontanelle subsides, and prompt relief of symptoms is obtained.

Craniotomy should be promptly performed upon the cases of supratentorial hemorrhage. This may consist of a decompressive operation or an osteoplastic craniotomy with the removal of the blood. In view of the fact that the hemorrhage is on the surface of the brain and not into its substance, a simple decompressive craniotomy without disturbance of the clot may at times suffice, or in very grave cases be performed preliminary to a later operation for the removal of the blood.

The delicate brain tissue of the infant illy withstands the effect of pressure. This is eloquently borne witness to by the many cases of Little's disease, the various degrees of amentia, and autopsy statistics, the compression anemia preventing normal medullation and development. The architecture of the infant's skull is planned to relieve a certain degree of increased intracranial pressure, being partially distensible by means of the broad sutures and the fontanelles, which latter may be termed nature's prophylactic decompression. This provision, however, suffices for only the mildest degrees of increased pressure beyond which operative decompression must be performed to prevent the degeneration of the brain or the impending medullary paralysis in the more severe hemorrhages.

Subdeltoid Bursitis.

ISRAEL (*International Journal of Surgery*, January, 1921) in an excellent article on this subject describes the thin-walled subdeltoid bursa. Its base is formed by the tuberosity of the humerus and the tendons of the short rotators which are inserted into the tuberosity. Its roof is formed by the periosteum beneath the clavicle, the coracoacromial ligament and the acromion, and by the upper part of the fibers of origin of the deltoid muscle. Its limits beneath the deltoid muscle vary considerably, but the outline is apt to be trilobar like a clover leaf, and to extend below the edge of the acromion for about an inch and a half at its deepest point. On the whole it is circular in outline, concave-convex in shape, and about the size of the palm of the hand.

He quotes Codman to the effect that it is not too much "to assume that this bursa, like other bursæ, in response to the insult of trauma, overuse, unaccustomed use, or infection, may become inflamed, may become overdistended with fluid, may be filled with fibrinous exudate, or that its contiguous surfaces may become adherent."

The anatomy shows that the smooth action of the adjacent surfaces is necessary for abduction and rotation. Is it surprising that after a blow on the point of the shoulder the patient complains of pain on abduction and rotation, and that involuntary reflex spasm holds the joint so fixed that the scapula follows all the motions of the humerus? Is it surprising that if fixation of the arm is maintained for a num-

ber of weeks, either through misdirected treatment or the unwillingness of the patient to let those two bruised and inflamed surfaces slide on one another, adhesions between the two take place?

Suppose again that overuse is the cause of the insult to the serous surfaces. A baseball pitcher is constantly abducting his arm, carrying the tuberosity in under his acromion and then snapping it out again as he throws the ball. There is a point of friction as the highest part of the tuberosity passes under the acromion, and its continued irritation leads to a "glass arm." When adhesion takes place the arm becomes shoulder bound.

In other cases the irritation may come from sepsis, from gonorrhea, from sudden exertion or pressure, but we have a right by analogy to assume the same sequence of conditions—an inflamed serous membrane, reflex spasm, serofibrinous exudate, and finally adhesion of the surfaces. This is the ordinary life-history of inflammation of the subdeltoid bursa. When, in the severe cases, adhesion has taken place, the pain subsides and the symptom is stiffness due to actual mechanical limitation. At this point nature begins her slow cure. As in the peritoneum, the adhesions melt away, and those that have become organized stretch until at length the normal arc of motion is restored.

Clinically, we find cases of all degrees of severity, from mere discomfort in raising the arm to firm ankylosis. It is most convenient to separate three types, although border-line cases occur frequently.

First, acute or spasmodic type.

Second, subacute or adherent type.

Third, chronic or non-adherent type.

The symptoms of the first or spasmodic form are:

Localized tenderness of the point of the shoulder, just below the acromion process, and to the outer side of the bicipital groove.

In a small portion of the cases this tender point, being on the base of the bursa, will disappear beneath the acromion when the arm is abducted. When it occurs this sign is almost pathognomonic.

Let the arm be lifted away from the side as far as possible, until its elbow rests upon the doctor's shoulder. In this attitude of passive extreme abduction the bursa in question will be so slid beneath the protection of the acromion process as almost or quite to be beyond reach of pain from pressure. The exquisitely sore spot will suddenly have disappeared, whereas this position will not abolish the tenderness on palpation from any of the other causes of it in this region.

This sign, called Dawbarn's sign, is, according to his own admission, pathognomonic of bursitis only when present.

When attempts at abduction or external rotation are made, the scapula is locked by spasm after a certain point and moves with the humerus. About ten degrees of motion can always be obtained without moving the scapula. In mild cases the spasm may be momentary and occur only just as the tender point disappears beneath the acromion, or just as it reappears from beneath it in the descent of the abducted arm.

In certain mild, early cases in which there is but little spasm, the patient alleges that he cannot, unaided, raise the arm to an abducted position, but will allow passive motion. Oftentimes this is not a real inability to abduct, and the patient merely means that he cannot raise the arm without pain. This pain is probably caused by the unwillingness—if we may use such a term—of the supraspinatus to start the pull on its sensitive tendon.

Pain is felt in the region of the point of the shoulder or down the outer side of the arm, even extending into the hand. Pain at the insertion of the deltoid may be the only symptom. At night discomfort and pain are particularly annoying, and the patient cannot sleep on the side of the lesion.

Occasionally effusion in the bursa is demonstrable, and frequently puffiness is felt upon palpation.

In the subacute or adherent type adhesions exist between the roof and the floor of the bursa, and there is an absolute me-

chanical limitation to abduction and external rotation. There may or may not be active inflammation as well.

Localized tenderness may or may not be elicited, according to the degree of existing inflammation. In recent cases it is usually present; in old, quiescent cases it is absent.

Since the tuberosity cannot be made to pass under the acromion, the point of slipping tenderness is not found.

Abduction and external rotation of the humerus are limited to a greater or less extent, usually so much so that the tuberosity will not pass beneath the acromion. The ten degrees of free motion in which the function of the bursa is not called into play persist; if they do not, the true joint is involved.

Beyond an arc of about ten degrees the scapula accompanies the humerus in all its motions, whether active or passive.

The pain is often in the same distribution as in the first type, and frequently occurs in the neck also. In the severe cases it closely resembles the pain of brachial neuritis. In some instances it may prevent sleep. In other cases there may be no pain whatever.

In severe cases there is sometimes inability to extend the elbow completely.

In the chronic or non-adherent type the essential characteristic is painful motion, but the full arc of motion persists. The trouble is due to slight irregularities in the contour of the base of the bursa, usually at the external side of the bicipital groove, so that the motion, instead of being smooth and free, is interrupted in its course as the irregular point passes beneath the acromion.

Local tenderness may or may not be present; it is often absent.

If local tenderness is present, the point of slipping tenderness is also found, for this can pass beneath the acromion.

Abduction and external rotation are but little, if at all, limited, but at some point in abduction acute tenderness is experienced, which disappears as soon as the tuberosity is safely beneath the acromion. In lowering the arm this sensation is again experienced.

The scapula does not accompany the motions of the humerus; the motions may be jerky and uneven.

There may be considerable pain, especially after use.

In treating the acute cases there are two indications: the patient's comfort and the prevention of adhesions. The position of the arm is of importance. The patient may be seated beside a table and the arm laid in abduction on a pillow on the table. This position relaxes the short rotators and deltoid, and allows the tender point at the base of the bursa to avoid contact with the tip of the acromion. At night the arm is supported on a pillow placed with its long axis at right angles to the patient's body as he lies on his back. When the patient has to be about, a sling may be used with the utmost caution. He should be instructed occasionally to take his arm out of the sling and let it swing by his side or, when possible, to let it rest on the table or on the arm of his chair. A Velpeau bandage should never be used for more than a day or two. Massage, applied not to the region of the bursa but to the surrounding muscles, is of value. Counter-irritants are of little avail.

The following treatment of acute subdeltoid bursitis is given by H. F. Wolf, of New York (Mt. Sinai Hospital): "A wet dressing is kept on day and night, changed every twelve hours. High doses of aspirin, 50-60 grains daily, are given and very gentle massage is performed. The latter must be done with the palm of the hand after sprinkling a good supply of talcum powder on the parts to be treated. Relief of the pain should be immediate. If this is not the case, the treatment was too severe or the diagnosis incorrect."

What has been said in regard to the treatment of the first class of cases applies also to the more acute cases of the second or the adherent type—so long at least as the adhesions are still more or less plastic. When they have become organized and firm we have to deal with an actual mechanical impediment to motion, instead of spasm of the neighboring muscles. Frequently both

factors are met, sometimes one predominating, sometimes the other. In the severe cases treatment falls under one of the following three general plans:

A. Gradual stretching: (1) Leaving improvement to natural use. (2) Massage, passive and active exercise. (3) Manipulations by physician without anesthetic. (4) Zander exercise. (5) Baking, electric light baths, etc.

B. Rupture under an anesthetic: (1) Manipulations under an anesthetic without incision. (2) Manipulation followed by fixation in abduction.

C. Division: (1) Incision into the bursa and direct division of adhesions. (2) Excision of the subdeltoid portion of the bursa.

The first group of methods, while sometimes adequate, more often is only palliative, and at best merely shortens somewhat the duration of the disability.

Dr. Codman advocates that after breaking up the adhesions the arm should be held in abduction and external rotation by means of a modified Monk's splint. This allows the raw surfaces to be apart. He also emphasizes that "complete abduction (elevation) of the humerus necessitates external rotation. Flex your elbow to a right angle, rotate your humerus inward, and try to abduct. When your humerus arrives at the horizontal it will no longer move on the scapula, for the base of the tuberosity impinges on the acromion. Now rotate the humerus outward, and you will find that the arm will go into full abduction because the tuberosity rolls out of the way and the concavity of the surgical neck takes its place and does not impinge on the acromion."

Dr. Codman keeps a splint on from two days to two weeks. After its removal the patient puts his arm through the full arc of motion once a day or more. The Zander apparatus helps to keep the arm in good condition.

In some cases rupture of the adhesions under an anesthetic undoubtedly shortens the period of convalescence by many months. There are two main objections to it: it may tear the normal joint structures more easily through the dense adhesions in the bursa, and thus rupture the atrophied and stiffened supraspinatus or the other short rotators, or in those cases in which the adhesions alone are ruptured there is a tendency for them to form again, since the soreness incident to manipulation starts scapulohumeral spasm once more and leaves the raw surfaces in contact.

The third form of treatment, that of open division, is recommended by Dr. Codman. All adhesions should be freed either with the finger or with scissors and forceps.

Drainage should be provided for; suturing the skin incision only.

The patient should then be placed in bed with the arm held in abduction by strapping a forearm splint to the head of the bed. Passive motion should begin early.

Dr. Charles F. Painter is of the opinion that open incision and removal of the entire sac should be practiced upon all cases, be they occupational or traumatic, which have lasted for six months or more. If they have caused trouble for as long a period as six months they will require, even after a thorough manipulation under ether, a very long time to regain normal motion, if indeed they ever recover completely.

Dr. Painter says: "Restitution of normal motion has been accomplished with much less effort and very much sooner after the dissection of the bursa than after the most satisfactory other manipulation I have seen."

The Use and Misuse of the Curette.

FOTHERGILL (*Lancet*, Jan. 8, 1921) in a discussion on this subject observes that there is nothing to be gained by exaggerating the risks of dilatation and curetting—namely, infection, splitting the cervix, and perforating the body of the uterus. Infection can be avoided by the usual precautions. If the operator retains in his own hand one of the vulsellæ with which the uterus is drawn down during dilatation, his own muscular sense will estimate the force he is exerting upon the dilator in his other hand. Thus he should avoid the risk of

causing serious laceration of the cervix. It is much easier to perforate the uterus with a small dilator than with a large one. Therefore it is wise to push in the smaller dilators only 2½ inches and to refrain from attempting to measure the uterine cavity until the internal os will admit the passage of a large dilator. The length of the cavity once estimated, the operator is not likely to perforate or tear the uterus with the curette. Clean perforation of a healthy uterine wall does no harm, as the uterine muscle closes the hole at once. But if the organ is so atrophied or degenerated that it tears easily it should be removed at once.

To sum up, the broad fact remains that the curette is mainly a diagnostic instrument. Apart from mere increase in the duration or quantity of the menstrual flow, and in the presence of any uterine hemorrhage whose cause is not clear, the rule, "When in doubt, curette," is a sound one.

In women of reproductive age the cause of irregular bleeding is found in the majority of cases to be retained products of conception; and it is remarkable how often these relics are found in women who will not admit that they have missed a single period. Sometimes one or more polypi are found. Occasionally, though the cervix feels normal, the curette finds a place within the cervical canal where epithelioma yields like cheese. And not so very rarely malignant disease is found within the body of the uterus. After the close of reproductive life uterine bleeding absolutely demands dilatation and exploration by curette unless the hemorrhage has an obvious cause, such as cancer of the cervix, the twisting of the pedicle of an ovarian cyst, or the degeneration of a fibroid. In these post-menopause cases exploration generally reveals the presence of cancer of the body of the uterus; but sometimes there is nothing but the result of a chronic infection whose steps are senile vulvitis, vaginitis, cervicitis, endometritis. In these cases, if the cervical canal becomes occluded after the endometrium has been infected, the result is pyometra, with distention of the uterus by pus and blood-stained purulent vaginal discharge. Now, in cancer of the corpus uteri infection of the ulcerated new growth occurs very late, so that the discharge becomes offensive only when the disease is far advanced. The foul discharge means pyometra or late cancer of the body, while a discharge of pure blood through a clean vagina means early cancer of the body. The cases of senile hemorrhagic endometritis and of pyometra are more numerous than we realize, and they are quite curable by the curette. Thus the operator who removes every enlarged bleeding uterus in an old patient without preliminary exploration will subject to the discomforts and risks of hysterectomy a certain proportion of old ladies who could have been cured by a simpler and safer method.

Carbuncles.

PHILLIPS (*Lancet,* Jan. 8, 1921) holds that the sequence of events in carbuncle is, first, necrosis of tissue, and the inflammatory process is secondary, being the natural method of separation of the slough from the living tissues and eliminating it from the body, much as happens in gangrene in other parts. In some cases the sloughing is caused by an early thrombosis of vessels due to microbic invasion. This would be especially suggested in such cases as begin with sudden pain. The proximate cause is generally, possibly always, the staphylococcus pyogenes aureus. The author describes pain as the first symptom. He alludes to two types: the superficial and the deep. In the latter the slough is slow and eliminated with difficulty.

As to treatment the author advises local subcutaneous injections of carbolic acid 1 in 20 as a means of abortion. Hot fomentations are approved. Antiseptic applications should be avoided; squeezing is reprobated; gentle syringing of the exposed area is warmly commended. It is regarded as important to abstain from rubbing the skin with spirit or ether soap, which seems to open up the follicles in the skin and is sure to be followed by a plentiful crop of

staphylococcal pustules or secondary carbuncles.

Ointments are objectionable since they favor secondary pustules. Collosol manganese intramuscular injections are regarded as a remedy of great value not only for carbuncles, but for other staphylococcal infections. Indeed he regards it as the most efficient treatment he has used. Doubt is expressed as to the value of vaccine treatment. There is a discussion of operative treatment.

Tabes.

BUZZARD (*Lancet*, Jan. 8, 1921) places particular stress on the lightning pains of tabes as enabling the physician at times to make an early diagnosis before the other symptoms have appeared. These pains are characteristic. They stab like a knife, or a darning-needle going in, or they resemble the effect produced by taking up the flesh, pulling at it, and letting it go. The pains come not singly, but if not in battalions at any rate in platoons. They are rapidly repeated, several occurring in the course of a second or two, followed by a lull of longer or shorter duration. Bouts of paroxysms may last from a few hours to a few days and then cease for a time. The favorite sites of these pains are the heel, the inner aspect of the shin, and the inner aspect of the knee. The area within which they repeat themselves is small, described by the patient as the size of a crown-piece or no bigger than the palm of the hand. Between the frequent paroxysms these areas are often tender to light touch, so that the patient does not even like the contact of his clothes. In the early stage of the disease pains rarely occur after exercise. These pains must be recognized in all their severity to be sure of their character. Many patients confess to what they call "niggling pains," trivial in respect to suffering, but identical in nature with the lightning type.

The necessity for advising antisyphilitic treatment of tabetic patients is not now so urgent as it was a few years ago, but it may be doubted whether the principles of this treatment are yet adequately recognized. We are all asked, "How long must I go on with treatment before I am cured?" For many years Buzzard's answer has invariably been, "For the rest of your life." He said he was never consulted about a primary chancre, but if he were his advice would be the same. It cannot be denied that we are not and never have been in a position to tell a patient that he has been cured of syphilis, and as neurologists we are now constantly seeing tabetic patients who have been cured of syphilis by the arsenical compounds, just as fifteen years ago we saw those who had been cured by mercury. Buzzard maintains that the only honest advice we, as medical men, can give to patients suffering from any syphilitic disease is to the effect that they should continue to have periodic courses of treatment for the rest of their lives. Tell them that prevention is better than cure, and that they must regard this precaution as a method of insurance. In his experience so many victims of tabes and other syphilitic nervous diseases have allowed valuable time to slip by owing to negative Wassermann reactions that his confidence in this test as a method of regulating treatment was shattered.

Surgery of the Spleen.

The *Lancet* of January 22, 1921, contains an admirable contribution on this subject by SIR BERKELEY MOYNIHAN in which he reaches the following conclusions:

It is evident that a consideration of the whole subject of diseases of the spleen must take a very wide view. A number of symptoms may direct attention to the spleen, even when clinical examination does not reveal the presence of splenomegaly. It is through the correct insight into the significance of the clinical symptoms and other morbid phenomena that the real understanding of any supposed case of splenic disease becomes possible. Instead of searching only for the existence of this or that splenic disease, an inquiry should be di-

rected to the determination of the functional capacity of all the various organs likely to be deranged. The symptoms already named may be looked upon as evidence of some disorder in the particular systems now under consideration. This derangement must be regarded not merely as a restriction of the morbid changes to the spleen, but as a disturbance of wide ramification throughout the whole body, affecting one or other, or perhaps even all, of the four systems in which the spleen plays a part. The focus, at the moment, may in truth be in the pulp of the spleen; but even so the general picture presented by the patient is the outcome of the participation of the other systems in the process which started in the spleen. It may be that splenectomy in any of these diseases will remove the obvious culmination of the morbid process, and thus bring about a "cure" of the disease or an arrest of its development; but it does not by any means follow that all the other related parts are thereby caused to return to their normal states. Absence of symptoms does not imply the restitution of normal functions.

A further step in the investigation of the clinical condition of the patient should aim at the exact discovery of the site of the lesion in certain particular cell types: (*a*) in the spleen-pulp; (*b*) in the bone-marrow and in any part where reticulo-endothelial cells may exist in specially congregated or active masses; (*c*) in the liver; (*d*) in the endocrine organs, including the pancreas. This lesion being predicted or recognized, the question will arise as to whether it consists in or entails the elaboration of poisons capable of causing hemolysis, cirrhosis, or asthenia.

The tissue affected, and the changes therein resulting, being recognized, further research must be directed to the discovery of the type of infective agent at work, whether bacillary, spirochetal, or other. In other words, the patient is no longer to be regarded merely as the victim of some type of "disease," but as the victim of disorders of a certain character in certain parts of certain anatomical or functional systems of the body. The form of the disorder, the form of distribution (determined by an assessment of the functional capacity of the several organs concerned or likely to be concerned), when correctly studied, will inevitably lead to the source and cause of the morbid state, and ultimately to the prospect of the "cure" of the patient.

"Megalocolon."

LADD (*Boston Medical and Surgical Journal,* Jan. 27, 1921) reports five cases and supplements his clinical study of these by a review of literature from which he has collected 113 cases. Sixty of the 118 were treated medically, with 41 deaths and 7 cured. Fifty-eight were treated surgically with 24 deaths; 2 unimproved; 8 improved; and 24 cured.

The two operations which are worthy of consideration are colostomy and resection of the affected colon with anastomosis between the normal gut above and the lower sigmoid below. From the figures quoted above it would appear that the chance of curing a patient by the surgical treatment was over three times as good as that by medical treatment. The chance of losing the patient is two-thirds less. The number of improved and unimproved is similar with both lines of treatment. It may be said that the disease is not a very common one and that the average surgeon does not have the opportunity to perfect his technique as much as he might wish. The largest number of operated cases reported by any one man is seven, of which five recovered and two died. It is a striking fact that practically all deaths reported from surgeons are from peritonitis, there being only one or two from shock or other causes. This being so it would seem that with improved technique and better judgment the future offers a much brighter outlook than the past, and that even now one should unhesitatingly recommend surgical treatment for all the pronounced cases. For moderate cases in which the enlargement of the colon is not great it would seem that medical treatment should be at first tried and surgery resorted to when medicine has proved unsuccessful and before the patient is *in extremis.*

Splenic Anemia: Banti's Disease.

MOYNIHAN (*British Medical Journal*, Jan. 22, 1921) quotes Banti as having described the condition to which this name is given in 1883 and again in 1894, together with the fact of Gretzel's publication in 1866. The condition he described is characterized by this author as splenic anemia. Banti considered the disease as possessing clinically three stages, merging gradually into each other. These stages were:

One in which there was enlargement of the spleen and a secondary anemia, the duration being three to twelve years.

One in which the liver gradually enlarged, and the amount of urine underwent progressive diminution; the duration was brief.

One in which the liver gradually shrank in size and ascites appeared, the symptoms being those of an ordinary atrophic cirrhosis; the duration of this stage was between one and two years.

The disease was invariably fatal, and death occurred either from hemorrhage or from autointoxication from cirrhosis.

Splenic anemia was defined by Osler as "an autointoxication of unknown nature characterized by great chronicity, primary progressive enlargement of the spleen which cannot be correlated with any known cause, anemia of a secondary type, with leucopenia, a marked tendency to hemorrhage—particularly from the stomach—and in many cases a terminal stage with cirrhosis of the liver and jaundice."

This as a rule is not difficult. The mistake Moynihan most commonly has seen was in the making of a diagnosis of gastric or duodenal ulcer. He has now seen five cases in which a patient suffering from splenic anemia was referred to him as an example of these diseases. The absence of a clear history of dyspepsia, the presence of an easily palpable spleen, and the blood changes, soon revealed the true condition.

In any doubtful case an *x*-ray examination would almost certainly clear the uncertainty and demonstrate the presence of a chronic gastric ulcer.

The only treatment for splenic anemia is splenectomy. The appropriate moment for the removal of the organ is chosen. It is inadvisable to operate soon after a grave hemorrhage, or when the spleen is extremely large. In the latter case the effect of radium on the tumor should be tried; almost certainly it will cause a rapid and considerable shrinkage in the organ. If this should happily be the case, splenectomy is done when the spleen is at its smallest, and before it has begun to enlarge afresh, as it will certainly do after a few weeks. It is imperative to operate upon cases of this disease as early as possible. No other form of treatment needs consideration; the dangers and difficulties of the operation increase with the lapse of time; early operation means a more certain chance of recovery and a quicker convalescence. In the later stages the mortality of operation is higher, amounting to 25 per cent, as compared with an average of about 10 per cent. In the terminal stages operation becomes so dangerous that only the inevitably fatal outcome of the unhealed disease justifies its performance.

The degree of improvement that may take place is astonishing, even in the late stages of the disease, with advanced involvement of the liver. It is, as W. J. Mayo says, an evidence that the great power of the liver to regenerate its specific cells is utilized to the full.

The difficulties of the operation are greater in splenic anemia than in any other disease. In almost all cases adhesions binding the organ especially to the under surface of the diaphragm are present. They may be numerous and exceedingly dense, and their separation may cause a copious and grave hemorrhage. But they are never so dense nor so strong as to prevent the completion of the operation. The details of the operation in other respects are the same here as elsewhere. At the Mayo clinic up to September 20, 1920, 73 operations had been performed, with 9 deaths, equal to 12.3 per cent. The after-results are excellent; the rather high operative mortality is due to the technical difficulties of the late cases, which, apart from operation, would all be fatal.

Reviews

THE HANDBOOK OF ELECTROTHERAPY FOR STUDENTS AND PRACTITIONERS. By Burton B. Grover, M.D. Illustrated. The F. A. Davis Company, Philadelphia, 1921. Price $4.

In his Preface the author tells us that about 25,000 physicians in the United States employ electricity as a therapeutic agent in the sense that many of them have in their possession some form of electrical apparatus. On the other hand he regrets the fact that few medical institutions include electrotherapeutics in their curriculum, and so he has endeavored in this volume to give practical instruction concerning the indications and use of the various currents in practice. While his descriptions are brief, nevertheless he has tried to make them up to date. Possibly the most important statement he emphasizes is that electricity has not magic formulas, but is an efficient helpmate in the practice of medicine.

The book contains twelve chapters, starting with elementary facts in regard to electricity; it deals with the electrotherapeutic application of galvanic and static currents, high-frequency and sinusoidal currents, the employment of electricity to improve blood-pressure and its use in genito-urinary diseases. There is a chapter upon diseases amenable to electrotherapy, another upon diathermy, still another on pain, and last of all a brief one upon roentgenology, which covers less than thirty pages. The book also contains no less than 103 illustrations. As an elementary contribution to his subject, the author has certainly come up to the task that he set himself.

MEDICAL NOTES. By Sir Thomas Horder, M.D., F.R.C.P. The Oxford University Press, New York, 1921.

In a little book of scarcely more than 100 pages Sir Thomas has gathered together notes which have already appeared in recent issues of *St. Bartholomew's Hospital Journal*. Many of them have also been published in the London *Practitioner*. With some of his writings readers of the GAZETTE are familiar, because we have abstracted portions of them for our "Progress" columns. These notes were originally taken in response to an invitation to put into writing some of the remarks which Sir Thomas has let fall in the out-patient department and in the wards of St. Bartholomew's in the course of clinical teaching.

The title of the book might well have been "Medical Aphorisms," because it is made up of brief sentences or paragraphs in which the author states clinical facts in a very clear and concise manner, dealing with all the conditions which are commonly met with in practice except the infectious diseases, although he does include tuberculosis, pleurisy and pneumonia, poliomyelitis and meningitis.

Some persons have the happy faculty of saying much in a very small space, and Sir Thomas is one of these. Thus, under acute miliary tuberculosis he makes the simple statement of fact that the signs, when present, are those of wide-spread capillary bronchitis, and again under acute caseous pneumonia he writes: "A somewhat uncommon disease, the signs are those of an extensive lobar pneumonia."

GRAPHIC METHODS IN HEART DISEASE. By John Hay, M.D., F.R.C.P. With an introduction by Sir James Mackenzie, M.D., F.R.C.P. Second edition. Oxford University Press, New York, 1921.

In the eleven years which have elapsed since the first edition of this book was published enormous strides have been made in the study of heart disease by graphic methods. Even that pioneer in this subject, Sir James Mackenzie, has learned much, as has also Dr. Thomas Lewis, whose name is so closely connected with this important subject.

As the author well says, the electrocardio-

graph is now an instrument of common use and has become essential to every well-organized cardiac clinic.

The book is divided into twelve chapters, and contains, considering its size, a very great number of illustrations, namely, 176; and as there are only 173 pages in the volume it is evident that a very considerable amount of space is consumed by their introduction. Many of the tracings are original with the author, but where he did not possess typical ones to illustrate his text he has borrowed, with credit, from other writers. He includes not only the electrocardiograph, but also an adequate description of the polygraph and sphygmograph, with methods whereby records obtained with these instruments can be accurately analyzed. Those who desire a brief but adequate description of these newer methods of clinical investigation will find this book very useful.

ELECTROTHERAPEUTICS FOR THE PRACTITIONER. By Francis Howard Humphris, M.D., F.R.C.P., M.R.C.S., etc. The Oxford University Press, New York, 1921. Second edition, revised and enlarged, and illustrated. Price $7.50.

The contents of this book are essays on certain useful forms of electrical apparatus and the use of electricity in some diseases which are amenable to electrical treatment. In this, the second edition, the author has introduced new chapters on galvanic, faradic and the sinusoidal current, and radiotherapy. His earlier contribution upon static electricity has not been much altered, or, as he expresses it, he has "rounded off one or two corners and filled in some vacant spaces." The author also expresses hope that the "scrappiness" of the first edition has been removed. The author is evidently an enthusiast on the subject of what electrotherapeutics can do, and begs of every medical man that he condemn not that which he knows not of.

It must be manifest from what has already been said that the author has not attempted to produce an exhaustive manual dealing with electrotherapy. The first sixteen chapters deal with various modes of producing and modifying electricity, and the remaining fourteen with its application to diseases of various portions of the body ranging from the joints to pelvic disorders, and diseases of the skin. Although it covers just 300 pages, it is closely printed and, therefore, contains more text than the average volume of its size.

FEEBLENESS OF GROWTH AND DWARFISM. By Dr. Murk Jansen, O.B.E. Oxford University Press, New York, 1921.

The author of this brief monograph is the Lecturer on Surgery in the University of Leyden. He tells us, when studying the nature and cause of achondroplasia, he came to the conclusion that two principles which had hitherto passed unnoticed were underlying the facts, namely, that injurious agents affecting growing group cells enfeebled their power of growth, and again that the measure in which growth is enfeebled is proportional to the rapidity of growth, which he has termed the law of the vulnerability of fast-growing cell groups. He further states that the whole of this book is an attempt to work out these principles. We must confess that we had not thought that the two facts to which he calls attention as essential had hitherto passed unnoticed, but the author brings forward grounds for the assumption that the similarity between rachitis and achondroplasia is determined by these two principles. He divides his text into two parts. In the first he deals with growth changes which are seen to develop after birth, and in the second part with congenital changes which, as he well points out, are more serious than those first named, and which one would naturally suppose would have been first considered in a book of this character. On the other hand the author points out that the congenital growth changes are often incompatible with intrauterine life, and therefore come more in contact with the pathologist than they do with the general practitioner.

In the first part he covers 44 pages and in the second 36 pages, dealing with the symptoms of feebleness of growth and its ratio to the proportion of the intensity of

the injurious agent, then proceeding to discuss the effects upon the various portions of the body.

In the second part his chapters are made up of subjects which from his Preface one would suppose would not be included. After an introduction he deals with anencephaly, achondroplasia, mongoloid idiocy, dysostosis-cleido-cranialis, congenital club-foot, and congenital dislocation of the hip.

The book is illustrated with quite a large number of figures, some of which are reproductions of *x*-ray photographs. It is in the second part of the book that we find the most numerous illustrations.

Those who are interested in the various forms of arrested development will find this contribution an interesting addition to their study.

A PHYSICAL INTERPRETATION OF SHOCK, EXHAUSTION, AND RESTORATION. By George W. Crile, M.D. Edited by Amy Rowland, B.S. Illustrated. Oxford University Press, New York, 1921. Price $8.75.

The purpose of this volume is to present some of the researches which have been in progress for many years in Dr. Crile's laboratory and also in France during the war. Produced under pressure, the author states that adequate reference to the work of others has been impossible. The text, of course, represents to a very large extent Dr. Crile's interesting views upon the subjects which it covers. The very enthusiasm which is so characteristic of him marks its pages and at times leads him to conclusions which others, who may be less enthusiastic, will be inclined to question. But without enthusiasm little would be accomplished by any one in the way of original work, and when a busy surgeon finds time to make original contributions to medical literature he commands the respect and admiration of his professional colleagues to an extraordinary degree.

The present volume, which is published in a very handsome manner, contains 120 illustrations in its 232 pages, including the index. Some of these illustrations are microscopic sections designed to show the changes produced in various portions of the nervous system by injury to parts which are far removed, or in some instances by emotional stress and strain, as, for example, changes which have been induced in the liver of a rabbit by repeated fright. Those who are inclined to doubt the reliability of such observations nevertheless cannot fail to be interested in these pictures.

We note with particular interest a tracing showing the effect of strychnine upon an animal in a moderate degree of shock. This tracing shows a very definite and somewhat prolonged rise of blood-pressure, which was followed by a fall to about the level it was before the injection. A second injection raised the blood-pressure again to a less degree, but a third injection produced no change. This tracing is of particular interest because we believe that many persons have thought that Dr. Crile was strongly of the opinion that strychnine was incapable of raising the blood-pressure in shock. It is quite true that this tracing may be taken as indicating that the use of strychnine, when repeated, ultimately causes exhaustion of the vasomotor center, but we believe that it is of equal value in showing that single or double doses may be useful in rallying a patient.

The pages which will probably prove most interesting to practitioners are those which deal with the effect of strychnine and adrenalin upon blood-pressure. In another tracing we note that strychnine caused an abrupt and sustained rise in blood-pressure with an increase in the length of the pulse wave, although the tracing is designed to illustrate the exhaustion of the vasomotor center by the stimulating effects of strychnine. The dose of strychnine which was given intravenously amounted to one-thirtieth of a grain, and although no statement is made as to the weight of the animal, nevertheless such a dose in proportion to its weight might easily be considered a poisonous rather than a therapeutic one for human beings.

It is not possible in the space which we have to deal with all the points which Dr. Crile brings up in a most interesting and

attractive manner. He has already won the respect of the English-speaking profession on both sides of the Atlantic for the work which he has done, and this volume will bring increased attention to a very important subject with which his name has been associated for many years.

THE SCIENCE OF OURSELVES. By Sir Bampfylde Fuller, K.C.S.I., C.I.E. Oxford University Press, New York, 1921.

We are told on the title page of this book that it is a sequel to the Descent of Man, from which one would imagine that it was a sequel to that celebrated volume written by Darwin many years ago. The author tells us that his thanks are due to Sir Edward Schafer, the eminent physiologist, for having read the pages and made suggestions.

Starting out with the statement that few will dispute the conclusion that the features of man's body have evolved from conditions approaching those of the ape, he tells us that his aim is to state an inferential theory which will explain the origin and course of feeling, thought, and behavior, although he admits that the undertaking must fall short of full achievement. Reasoning leads us to the conclusion that our feelings and thoughts are nervous processes owing their existence to evolutionary development of the spinal cord and brain, and while this is a view which is very hard to accept because it does violence to our respect for the human mind and runs counter to our cherished opinions, nevertheless the author believes his statement to represent a fact.

The book is divided into two parts, and in the ten chapters of part one he deals with what might be called elementary principles, while in the twelve chapters of part two he deals with the appetite, emotions, and will; fear, courage, and anger; respect, faith, and obedience; speech and writing, and numerous other cognate topics.

MEDICAL CLINICS OF NORTH AMERICA. March, 1921. W. B. Saunders Company, Philadelphia. Price per clinic year, paper $12; cloth $16.

Volume IV, No. 5, of the Medical Clinics of North America is made up of contributions by New York clinicians, who deal with a very large number of conditions met with in general practice, varying from papers by Geyelin on The Significance of Glycosuria to one by Ottenburg on the Practical Aspects of Blood Transfusion, and another by Bass upon Orthostatic Albuminuria.

These clinics are printed in large type which is easily read, with heavy leading, illustrated when necessary to make the text clear, and are undoubtedly of value to medical men who are far removed from great clinical centers.

A NEW POCKET MEDICAL FORMULARY. By William Edward Fitch, M.D. Third edition, revised. The F. A. Davis Company, Philadelphia, 1921. Price $2.50.

This closely printed book, on thin paper, of such size that it can be readily carried in the side-pocket of a sack coat, is interleaved so that the owner may from time to time place on its pages formulæ which appeal to him in addition to those which are placed in type. The book is arranged according to diseases in the order of the alphabet, and the author freely admits that his prescriptions have been taken from a very large number of works dealing with therapeutics or with the various specialties. There is a good deal of cross-referencing, so that if the physician fails to find under one heading what he is seeking the cross-reference may perchance give it to him. The last eighty pages are taken up with formulæ for hypodermic injections, with recipes for food for the sick and with diet lists which can be properly employed in various maladies. Last of all a number of double-column pages are devoted to tables of differential diagnosis.

THE PRINCIPLES OF THERAPEUTICS. By Oliver T. Osborne, M.D. W. B. Saunders Company, Philadelphia, 1921. Price $7.

Dr. Osborne tells us in the Preface of his new book that the one point constantly in his mind has been to present the data necessary for the advanced student to well understand the object of scientific treatment, the rational use of active drugs, and the physical methods used in the treatment

of disease. He has also aimed to present undergraduate subjects, as he calls them, tersely and concisely, and has included articles on prescription writing, electricity, massage, exercise, climate, and medicinal springs. There is also a chapter on medical ethics and a list of contagious diseases which are reportable. The book contains a little less than 900 pages. Of these 900 pages, 288 are devoted to drugs; no less than 112 to endocrine glands and organotherapy; 30 to measures varying from inhalations to bladder irrigations, cupping and leeching and transfusion. Then in Part III a little less than 30 pages are devoted to vaccines and serums, between 50 and 60 are utilized in discussions of foods and diets, and 70 odd pages deal with electricity, hydrotherapy, massage, climate, and mineral springs. There are also chapters devoted to chronic drug poisoning, industrial poisoning, and the treatment of simple disturbances of the surface of the body. One of the final chapters is entitled "Practical Advice to Young Physicians."

We think our readers have already gained the impression from what we have said that the book does not attempt to be a complete text-book for the average undergraduate, but that its intention is to provide interesting and practical information for students about to graduate or for active practitioners. With this intention in mind, the author has undoubtedly succeeded in presenting a large amount of text which can be easily utilized, and has thereby provided an excellent guide for many medical men.

THE PRINCIPLES OF HYGIENE. A Practical Manual for Students, Physicians, and Health Officers. By D. H. Bergey, M.D., D.P.H. Seventh edition, thoroughly revised; illustrated. W. B. Saunders Company, Philadelphia, 1921. Price $5.50.

For a book dealing with hygiene to have reached its seventh edition in twenty-one years with numerous reprintings is somewhat remarkable, because those who buy books dealing with this subject are not as numerous as might be, and because there are a number of other excellent text-books dealing more or less fully with this subject.

As illustrative of the universal effect produced by the great war we find that the scope of preventive measures in public health has necessitated a careful revision of those parts of the book which deal with the infectious diseases. The author goes so far as to discuss the detrimental effects of poison gases and the protective efficiency of gas masks. In the space of a little less than 550 pages the author has succeeded in condensing an enormous amount of practical information; indeed we wish that the title of the book might be a broader one, for he deals not only with the ordinary questions of hygiene, including ventilation, feeding, sewage, and the effects of exercise and clothing, but also with vital statistics and with the modes of dissemination of practically all of the infectious diseases known to man. There is also an excellent chapter upon disinfection and a valuable one upon quarantine.

NOUVEAU TRAITE DE MEDECINE. G. H. Roger, Fernand Widal, P. J. Teissier. Secretaire de la Redaction: M. Garnier. Masson et Cie, Editeurs, Paris, 1920. Price 35 f., net.

Volume I: Infectious Diseases. — The first volume of the new French System of Medicine begins with a chapter on infections by Roger, which is of a general philosophic character and deals with the subject in an informing manner. It is interesting to note that Roger assumes rather more definitely than do others the parasitic character of the inclusions observed in smallpox and vaccinia, and classes them among the spirochetes. Bacterial toxins he divides into endotoxins, exotoxins, and peritoxins; the last constitute the protective covering of bacteria and are essentially lipoid in nature. Roger also writes the chapter on the general streptococcic infections and on erysipelas. He recommends antistreptococcic serum in erysipelas, especially in erysipelas of the new-born. In the chapter on Septicemia by E. Sacquépée, among the many causes given the reviewer failed to find dental abscesses and pyorrhea. The chapter on Pneumococcic Infection and Pneumonia, by Menetrier and Stévenin, is exhaustive and deals more thoroughly with the pathological

physiology and the pathology than is the case in American text-books. The section on Serum-therapy is, however, too brief. Infection with the staphylococcus, with tetragenes, the enterococcus, Pfeiffer's bacillus, the diplobacillus of Friedländer, psittacus and proteus are interestingly treated by Magaigne. The latter does not consider Pfeiffer's bacillus as the cause of influenza, but as a secondary invader. An interesting chapter on putrid infections, in which putrid and gangrenous diseases of complex origin are discussed, is contributed by A. Veillon. The chapter on the meningococcus and on meningitis by Dopter is good, but fails to mention the important work done in this country by Herrick and others. The final chapter on gonococcic infections by M. Hudelow is exhaustive, occupying no less than 86 pages.

Throughout the work the bacterial cause rather than the local disease is emphasized, the various chapters being devoted principally to pneumococcie, streptococcie, gonococcie, etc., words for which the English language has no good equivalents. They can of course be rendered as pneumococcia, streptococcia, gonococcia; and as serviceable expressions for all forms of infection by the corresponding organisms, these terms might well find a place in medical nomenclature.

As a whole the Traité is unusually satisfactory and very nearly attains the ideal set for it by the editors, namely, that it should exemplify "les qualités primordiales de l'esprit français, l'exactitude de la documentation, la finesse de la critique, la clarité de l'exposition."

D. R.

THE EXTRA PHARMACOPŒIA. By Martindale and Westcott. Seventeenth edition, Volume II. H. K. Lewis & Company, London, 1921. Price 17s. 6d.

Some months ago we noticed in terms of highest praise the appearance of Volume I of the seventeenth edition of this valuable publication. The second volume forms an addendum to the first and contains an immense amount of information dealing with the chemistry of various substances which are used by the pharmaceutical and medicinal profession. For this reason this volume will not appeal to practitioners to the extent of Volume I, but on the other hand chemists and druggists will find it a book which will prove of very material aid. Printed on very thin paper, nearly 700 pages take up so little space that the book can be readily carried in the coat pocket, and its utilization is materially improved by the use of a flexible binding. If there is any book upon the surface of the earth which contains more information of value and interest as this one in such concentrated form we would be glad to know of it.

ORTHOPEDIC SURGERY OF INJURY. By Various Authors. Edited by Sir Robert Jones, K.B.E., C.B., F.R.C.S. Volumes I and II. Henry Frowde and Hodder & Stoughton, London, 1921.

Perhaps the major regret in the mind of one who has followed all of Jones's writing and work with entire approval and profit is to the effect that these volumes have in their entirety not been written by Jones himself. He has, however, chosen associates whose names and whose work are well known to American surgeons and practitioners, among them Sir Thomas H. Goodwin, Arthur Keith, Sir Henry M. W. Gray, Joel E. Goldthwait, E. W. Hey Groves, E. Farquhar Buzzard, Bristow, T. P. McMurray.

The editor fortunately has contributed largely. In his Preface he states that orthopedic surgery is based on, and consists of, the recognition and practice of definite principles of treatment, whether operative, manipulative, or educational, which lead to the restoration of function in nerves and muscles and in deformed or disabled limbs. The orthopedic mind is trained to think in terms of function. The operative stage, for which the surgeon should be fully equipped, although essential, has only its proportional value. It is noted that a governing principle in regard to curative work is founded on the knowledge that voluntary movements are of much more value than passive movements. Voluntary movement in one of its various forms has a direct curative effect upon the

muscular structure. It is further noted that at the orthopedic centers at one period during the war there were 500 compound fractures of the femur, with an average shortening of half an inch, and in none of those cases was internal splinting resorted to. Especial emphasis is laid upon the need of a thorough knowledge of general surgery by any surgeon who practices a special branch.

Jones expresses a deep debt of gratitude to the American government for the loan of twenty-five trained orthopedic surgeons during the war. He also notes with due appreciation the contribution of an article on the curative workshop by his Majesty, King Manuel, who created it, and for two years devoted the better part of each day to organizing and superintending the work. It is characteristic of Jones that his first volume should open with a paper on "The Principles and Practice of H. O. Thomas," who died in 1891, and whose studies and publications have had such a potent influence upon the proper development of orthopedic surgery. Then follows "The Prevention of Deformities," by Sir Henry M. W. Gray; "The Principles of Orthopedic Surgery as They Apply to the Military Need," by Joel Goldthwait; "Simple Fractures of the Upper and Lower Limbs," by W. H. Trethowan, sowewhat briefly discussed. Jones discusses "Mal-union of the Femur" in less than four pages, but with his customary vivid illuminating touch.

We find discussed through these volumes Chronic Osteomyelitis; Disabilities of Joints of the Upper Extremities, both in general and particular; the Orthopædic Surgery of the Hand and Wrist; Amputations and the Organization and Equipment of Centers for the Limbless.

In the second volume the question of the Surgery of the Peripheral Nerves is taken up in much detail. Tendon Transplantation, Injuries of the Head and Spine, and Purely Functional Reflex Disabilities in Their Relation to Orthopædic Surgery; Splints and Plaster; the Use of Electricity; Massage; the Ling System of Exercises; Hydrotherapy; Orthopædic X-ray Work; Scheme and Organization of Curative Work Shops, by King Manuel; the Organization and Administration of a Military Hospital.

In these volumes are found subjects not usually included under orthopedic surgery.

Probably the whole profession would welcome more Jones and fewer "various authors." As is true in all books thus compiled the various authors vary greatly in the completeness and efficiency with which they have traversed their subject. The compilation, however, has in it Jones's work, nor can the surgeon nor the orthopedist do without it.

TRAUMATIC SURGERY. By John J. Moorhead, B.S., M.D., F.A.C.S. Second edition. W. B. Saunders Company, Philadelphia and London, 1921.

This, the second edition of Moorhead's excellent work, embodies the results of the experience acquired during the war. The purpose of the book is to place in one volume the information necessary to diagnose all of the usual and most of the unusual effects of accident and injury. The arrangement does not differ from that recognized as somewhat standard.

In regard to shock, there is not the discussion concerning the underlying cause which has so largely occupied space in current literature, nor do we find mentioned the theory of absorption from crushed tissues, which has much to support it and has a distinct bearing on practice.

In the section upon Injuries of the Joints there are excellent pictures of blood supply, credit being given for these to the surgical clinic of Dr. John B. Murphy. There is an adherence to through-and-through drainage tubes which recent practice has seemed to indicate undesirable.

The classification of subjects is in accordance with the usual practice. Under Fractures the reader finds approved the methods which large recent experience has shown most serviceable. Injuries are taken up from the regional standpoint.

Injuries to the Head, the Spine, the Chest and the Abdomen are considered under indicative headings. Injuries to the nerves,

blood-vessels and lymph vessels are taken up together. Burns, heat-strokes and frost-bites receive brief consideration.

The author is evidently not impressed with paraffin treatment of burns, or any modification of it. In the treatment of drowning, mechanical apparatus is characterized as unreliable, the advice being given to place reliance on manual means. It is stated that a tube introduced into the trachea attached to a bellows may prove a valuable emergency method.

As to treatment for suffocation by smoke inhalation, the inhalation of fumes from vinegar is regarded as a valuable adjunct, and it is maintained that a favorite remedy with firemen is birch beer.

Next is considered Injury in Relation to Abortions, Appendicitis, Visceral Prolapse. There is a chapter devoted to Traumatic Neuroses, and an excellent one; a chapter to Eye and Ear Tests and Standards, to X-rays and X-ray Burns; one to Medico-Legal Phases, of distinct value to all practitioners of either medicine or surgery. Finally, a chapter on Standardized First-aid Methods in Accident, under which caption is also found a description of a standardized first-aid room and of a standardized method of physical examination.

Correspondence

Cure of Hernia by Vaccine.

To the Editors of the THERAPEUTIC GAZETTE.

SIRS: It is generally observed that cuts or gaps in the skin heal up as a result of inflammation even when they are not sutured. This gave me the idea that inflammation may be the chief cause of the cure of hernia by operation, and in order to investigate this I inoculated 100 millions of bacillus pyocyaneus vaccine into the abdominal ring through the inguinal canal after reducing hernia in a case of inguinal hernia three years ago, and found to my satisfaction that the hernia was cured. The man remained cured of hernia for nearly two years, till his death from influenza. During the last three months I tried this method in five more cases of inguinal hernia (scrotal). Out of these six cases four recovered completely, and in two the recovery was partial—that is to say, there was no protrusion, but only an impulse on coughing. The cases are under observation to see whether these results will be permanent.

The injection of vaccine produces a slight rise of temperature, varying from 100° to 102° the same evening. The next morning the temperature comes to normal and remains normal throughout the treatment. With this temporary rise of temperature the patient feels some tenderness over the seat of injection for a day or two, and nothing more. The treatment is so simple and the result so effective that it is worth while to recommend its use in every case of hernia.

A purgative is administered a day before treatment, and a complete rest is enforced for ten days. Use of bedpan and glycerin-enema are quite essential during this period. Afterwards the use of spica bandage for a month is required to complete the cure.

S. MALLANNAH, M.D., D.P.H.,
Bacteriologist to
H. E. H. the Nizam's Government.
HYDERABAD, DECCAN, January 6, 1921.

[The above communication is of interest, but we would advise caution in resorting to it.—EDITORS.]